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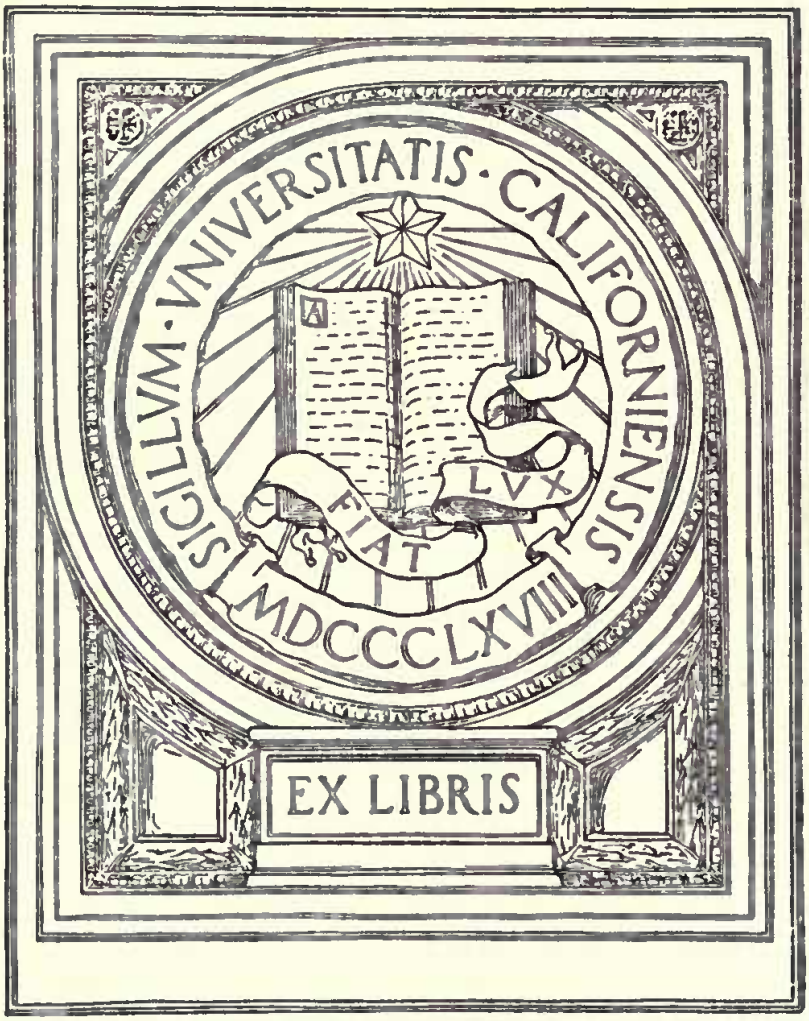

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LIVES OF LABOUR

AUDUBON AFIELD

T NELSON AND SONS.

LONDON, EDINBURGH AND NEW YORK

LIVES OF LABOUR;

OR,

Incidents in the Career of Eminent Naturalists and Celebrated Travellers.

BY

C. L. BRIGHTWELL,

AUTHOR OF "ANNALS OF INDUSTRY AND GENIUS,"
"ABOVE RUBIES," ETC.

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Linnæus Naming the Flowers.

"The Swedish sage admires, in yonder bowers,
His winged insects and his rosy flowers;
Calls from their savage haunts the woodland train
With sounding horn, and counts them on the plain:
So once, at Heaven's command, the wanderers came
To Eden's shade, and heard their various name."—CAMPBELL.

IT is pleasant to trace the steps of a genius like Linnæus going over completely new ground in the wide field of natural history; classing and naming birds, insects, and flowers, oftentimes according to a system which his own ingenuity and penetration had devised to supply the deficiencies of former naturalists. An active examination of the minuter parts of the object under his consideration frequently enabled him to arrive at a juster conclusion as to the order or genus to which it belonged than others who had preceded him; and sometimes, after having with indefatigable industry ascertained these points, he indulged himself in combining with his new discovery associations of friendship or of historical or classical allusion. After this fashion he honoured

several of his patrons and pupils.* Thus the *Celsia* was so called after Celsui, one of his earliest benefactors; and the *Kalmia*, now so well known in our gardens, commemorated his friendship for Professor Kalm, his pupil and fellow-labourer. In his "Critica Botanica" he observes, concerning this habit of the appropriation of celebrated names to the genera of plants, that "a proper connection should be observed between the habits and appearance of the plant and the name from which it has its derivations;" and as an emblem of himself he chose the *Linnæa borealis*, which he described as "a little northern plant, flowering early, depressed, abject, and long overlooked." It was gathered by him at Lycksele, May 29, 1732. It is common in

* It may not be generally known that the botanical name for the genus of plants which includes the Peruvian bark is *Cinchona*, so called by Linnæus in grateful remembrance of the lady to whom we are indebted for the discovery of this precious febrifuge. The Countess del Cinchon, the wife of a Spanish viceroy, being attacked by fever during her residence in Peru, determined to try the skill of the native herbalists, who cured her by the use of this medicine, which, on her return to Spain in 1632, she hastened to introduce to the notice of the Spanish physicians. Among others, she mentioned it to Cardinal Lugo, who carried it to Rome in 1649. Its efficacy was soon universally known throughout Europe; and the Jesuits, hastening to appropriate to themselves the credit of the discovery, procured the transmission of large quantities of the drug, which soon obtained the name of "The Jesuits' Powder." Sebastian Badus, physician to the Cardinal Lugo, has related all these facts in an excellent treatise, which he published at Geneva in 1661.

West Bothnia, and in almost all the great northern forests; but it may be easily overlooked, because it grows only where the woods are thickest, and its delicate twin-blossoms are almost hid among the moss, and interwoven with ivy. Their smell resembles that of the meadow-sweet, and is so strong during the night as to discover the plant at a considerable distance.

When he received his patent of nobility, Linnæus adopted this floweret as a part of his crest—the helmet which surmounts the arms of his family being adorned with a sprig of Linnæa. One of those pupils who visited distant countries to add to the collections of his great master, sent from China a service of porcelain, manufactured purposely for him, having a representation of this plant as its only decoration; and the Cardinal de Noailles erected a cenotaph in his garden to the memory of the naturalist, and planted the Linnæa by its side as its most appropriate ornament. What lover of flowers but will regard with interest this little flower of the north, for the sake of him whose name it bears? *

For classical allusion and romantic feeling, a more striking example cannot be given than the

* The two-flowered Linnæa was first discovered in this country in a wood at Mearns, on the borders of Aberdeenshire, in 1795. It has since been found in similar stations in the Highlands or other borders.

naming of the *Andromeda polifolia*. In traversing the uncultivated wilds of Lycksele-Lapland, whither, while yet a young man, Linnæus was sent by the Royal Society of the University of Upsal on a tour of scientific research, he found this plant in great abundance, decorating the marshy grounds with its delicate blossoms. It is a beautiful little flower, somewhat resembling one of the heaths (*Erica Dabœcia*); the buds are of a blood-red colour before they expand, but when full-blown the corolla is of a flesh colour. In contemplating the delicate blossoms of the *chamæ daphne*, as it was then called, the imaginative mind of the naturalist was struck by a fancied resemblance in the appearance and circumstances of this plant to the story of Andromeda, as related by the ancient poets. "A maiden of exquisite beauty, chained to a rock amid the sea, and exposed to monsters and venomous serpents. This lovely little flower," he said, "is her vegetable prototype. Scarcely any painter could so happily imitate the beauty of a fine female complexion, still less could any artificial colour upon the face bear any comparison with this sweet bloom. I find it always fixed upon some turfy hillock amid the swamps, and its roots bathed by their waters. In these marshy and solitary places, toads and venomous reptiles abound; and just as in the case of Andromeda, Perseus

comes to deliver her from her dangers, by chasing away her foes, so does the summer, like another Perseus, arrive, and, drying up the waters that inundate the plant, chase away all her aquatic enemies; and then she carries her head (the capsule), which before had drooped pensively, erect, and displays her beauties to the sun." Pleased with the idea, he chose for this flower—which formed a new genus in the botanical system he was then arranging—the name of Andromeda.

Linnæus visited England in the year 1736. Nothing has been preserved of his observations respecting the natural history of this country; but there is a tradition which has spread far and wide, that when he for the first time beheld the bright golden blossoms of the gorse or furze on the broad-spreading commons near London, especially Putney Heath, so great was his delight that he fell on his knees in a rapture at the sight. He was always an admirer of this plant, and vainly tried to preserve it through a Swedish winter in his greenhouse. Perhaps some of my readers may share with me his preference for a flower whose sweet, honey-like odour fills the air, imparting delight, while its brilliant bloom entertains the eye, which might otherwise perchance weary of the monotony of those bleak and level places which are its chosen habitat.

It has been said that the poetical allusions and the elegancies of style observable in the writings of Linnæus, have done as much to recommend the study of botany, and to establish his own celebrity, as his more serious labours. Be this as it may, it is indisputable that to the influence exerted by this great genius is owing much of the proficiency of the Swedish nation in the study of natural history. "In Sweden," says Sir J. E. Smith, when recommending natural science to the rising generation, "natural history is the study of the schools, by which men rise to preferment;" and that most entertaining of travellers, Dr Clarke, has borne testimony to the zeal with which he found this branch of science pursued by men of various classes in that country. He has related a pleasing anecdote in point, which will not, perhaps, be inappropriate here. Arrived at Tornea, at the northern extremity of the Gulf of Bothnia, Dr Clarke sent to the apothecary of the place for a few jars of the conserved dwarf Arctic raspberry. He had observed "this rare plant" in the woods, near the shore where he landed, and found it bearing the first ripe fruit he had seen upon it. The flavour of its berries he thought finer even than that of the hautboy strawberry, and equal in size to those of our common raspberry-trees; but the "plant so diminutive that an entire tree, with all its branches,

leaves, and fruit, was placed in a phial holding about six ounces of alcohol." The fruit is annually collected and preserved, being used as a sauce with meat and in soups ; and wishing to send some to his friends in England, Dr Clarke purchased a few jars on reaching the town of Tornea. They were brought by a boy without shoes or stockings, who, having executed his errand, was observed to cast a longing eye towards some books of specimens of plants which lay on the table ready for arrangement. To the surprise of the travellers, he named every one of them as fast as they were shown him, giving to each its appropriate Linnæan appellation. They found, on inquiry, that this extraordinary youth was the son of a poor widow, who had placed him an apprentice under this apothecary. His master had himself a turn for natural history; nevertheless, he did not choose that his young pupil should leave the pestle and mortar to run after botanical specimens. "It interrupted," he said (and probably with sufficient reason), "the business of the shop." The consequence was, that the lad had secretly carried on his studies, snatching every hour he could spare to ramble, barefooted, in search of a new plant or insect, which he carefully concealed from his master, who at length, by accident, discovered his boxes of insects, which he unscrupulously appropriated to his own use, ex-

hibiting them in his shop window as of his own collecting! These facts interested Dr Clarke and his companions so much in behalf of the poor little Pyppon (for that was his name), that they showed him much kindness, procuring him some hours of relaxation from his toils, and giving him some English needles for his insects, and a few similar trifles, which appeared to him an invaluable treasure. Not unfrequently during their short stay they had recourse to him for what they required; and on one occasion, having told him that a rather rare plant was said to grow in that neighbourhood, but that they had failed to discover it, scarcely were the words uttered when he ran off, fast as his legs could carry him, and soon returned, bringing in his hand two or three specimens of the plant.

Before they left the place, the kind-hearted travellers resolved to give him a pleasure at parting, and prevailed on the apothecary to allow him to accompany them to the fair at Kiemi. The poor child had never, during six years, been farther from his master's door than an occasional summer scamper after his favourite studies; and his delight was unbounded, especially when he was shown the well-selected herbarium of the clergyman at Kiemi. But the hour of separation from his kind stranger friends came all too soon, and "little Pyppon," shedding abundance of tears, bade them farewell,

making this touching request at parting—"If you should remember me when you arrive in your own country, send me *Drosera longifolia;* I am told it is a common plant in England." This Drosera is the sundew, that well-known ornament of our mossy bogs, which grows on the borders of ponds and rivulets in moorland districts. Its beauty consists in the form and appearance of the leaves, which proceed immediately from the root, and spread over the surface of the ground, each plant forming a little circular plot of green, cup-shaped leaves, thickly fringed with hairs of a deep rose colour. These hairs support small drops or globules of a transparent dew, which continues even in the hottest part of the day, and in the fullest exposure to the sun.

To return to Linnæus. It is evident that he was never so entirely happy as when searching into the secret and hidden properties and workings of nature. Hence, we are told, he reckoned it among the choicest favours vouchsafed him by Providence that he had been "inspired with an inclination for science so passionate" as to become the source of highest delight to him. This diligent and minute observation was continually adding to his knowledge and imparting some fresh light in the study he loved. It is interesting to see him carefully noting the observations he had personally

made, and gradually perfecting his theories and systems. "He led a very active and bustling life," says one who visited him at Upsala. "I never saw him at leisure; even his walks had for their object discoveries in natural history." On one occasion he had received the seed of a rare plant which he was anxious to rear. He suceeded in his object; the plant bore two flowers. Delighted with them, he desired the gardener to take especial care of them; and two days after, returning home late in the evening, he eagerly went to the garden to see how they were thriving; but they were not to be found. The next night the same thing occurred. In the morning the flowers reappeared, fresh and beautiful as ever. The gardener supposed them to be new ones, as he had not been able to find them the two previous evenings. The attention of Linnæus was immediately caught, and he visited for the third time at nightfall his fugitive flowers. They were once more invisible; but he found them at last, deeply wrapped up in and entirely covered by the leaves. This discovery stimulated his curiosity, and he visited his gardens and hothouses in the night-time, lantern in hand, desirous of observing minutely the condition of the plants under the influence of darkness. He found the greater part of the flowers contracted and concealed, and the vegetable kingdom almost

entirely in a dormant state. From these facts he formed his theory of the sleep of plants, and proved that it occurred at regular periods, like that of animals. This discovery gave him the idea of forming a sort of vegetable timepiece, in which the hours of the day were marked by the opening and closing of certain flowers; and in the same manner he formed a rural calendar for the regulation of the labours of husbandry. The tables in this "Calendarium Floræ," as it was designated, were formed from observations made on the common plants of Sweden, in the garden at Upsala, in 1755. Mrs Hemans' pretty lines on this subject may probably recur to the mind of the reader:—

"'Twas a lovely thought to mark the hours,
As they floated in light away,
By the opening and the folding flowers
That laugh in the summer's day.
Yet is not life, in its real flight,
Mark'd thus—even thus—on earth,
By the closing of one hope's delight
And another's gentle birth?
Oh! let us live so that flower by flower,
Shutting in turn, may leave
A lingerer still for the sunset hour—
A charm for the shaded eve."

Sketch of the Life and Wanderings of Le Vaillant.

HOW tenaciously does memory retain her hold on the pleasures of our early days! The scenes, the events, and the people in whom we then took delight, are ever after remembered with peculiar satisfaction. And this is especially, perhaps, the case with reference to the books which afforded us entertainment then; there are never any pages so fresh and so life-like to our feelings as those. My readers may probably recall to mind many such favourites of their youth; it is the case with myself. Among others, I still retain an agreeable reminiscence of Le Vaillant's Travels, a book which, it has been well remarked, excels in the graphic power and life of its descriptions—which give them, indeed, all the charm of romance. His accounts of birds are such as could only be supplied by one with whom it was a passion to follow them into their most secluded haunts, and watch all their actions; while his personal narrative is a sincere and faithful record of

his impressions of the things he saw. The author delineates himself in his pages so unreservedly and so unconsciously, in his eagerness, buoyancy, enterprise, vanity, and warmth of affection, as well as unbounded enthusiasm, that he makes you his confidant and enlists your sympathies.

Like Audubon, Le Vaillant has prefaced his work by an autobiographical sketch of his early days; and it is so entertaining and natural that the reader will be pleased to have a considerable part of it given in his own words.

He was born in 1753, at Paramaribo, in Dutch Guiana, where his father, a rich merchant and native of Metz, was French consul.

He thus describes the place of his birth:—"That part of Guiana under the government of the Dutch West India Company is perhaps the least known to naturalists, though it is, without dispute, of all South America, the spot that offers the greatest variety of curious productions. On the left shore, three leagues from the sea, stands Paramaribo, the capital of this vast colony, which is my native country, the cradle of my infancy. Born of well-educated parents, who delighted in collecting the interesting and precious objects that enrich this country, I enjoyed from my boyhood the contemplation of a valuable cabinet, of which I shall hereafter have occasion to speak.

"From my earliest days my parents, who could not live without me, and were often undertaking tedious journeys to the farthest part of the colony, took me with them. Thus my first steps were in the desert, and I was almost born a savage. When reason began to dawn, my inclinations soon manifested themselves, and my parents aided to their utmost these first indications of curiosity. Under such good preceptors, I daily enjoyed fresh pleasures afforded by those natural objects to which all my studies pointed.

"Soon a desire of imitation, the favourite passion of infancy, gave impetuosity, I might say impatience, to my amusements. Flattered by self-love, I imagined I likewise ought to have a cabinet of natural history; and without loss of time declared war against caterpillars, butterflies, scarabæi, and, in a word, all sorts of insects.

"Thus every day I saw my collection of specimens accumulate, which I valued beyond measure, as they were all of my own procuring. So far it was all enjoyment, and I had not yet felt the obstacles that present themselves between enterprise and success. In one of our excursions we had killed a monkey. It was a female, and carried a young one on her back, which was not wounded. We took them both up, and on our return to the plantation the young one had not yet left the back of its mother,

LE VAILLANT AMONG THE BIRDS

holding so fast that I was obliged to get the assistance of a negro to separate them; which we had no sooner effected than, with the swiftness of a bird, he darted to a block, on which was a wig of my father's, and, clinging round it, appeared satisfied. I therefore let him remain there, feeding him with goat's milk. He continued in this situation for three weeks, when he abandoned his nurse, and became, by his tricks and merry conceits, the friend of the family.

"I had, without suspicion, placed the wolf in the sheepfold; for one morning as I entered my apartment, the door of which I had imprudently left open, I saw my unworthy pupil breakfasting on my beloved collection. In my first transports of fury I could have strangled him; but rage soon gave place to pity, when I saw how dreadfully he was punished for his gluttony, having, in cracking the scarabæi, swallowed the pins on which they were stuck. His torments made me forget his fault, and I only thought of helping the wretched sufferer; but my tears, and all the art of the slaves, could not save him from death. This accident threw me back a good deal, but did not quite discourage me. I now turned my thoughts in a different direction, and wished to collect birds; but as the slaves did not procure them to my liking, I armed myself with a shooting-tube and an Indian bow, which,

after a little practice, I used with great skill, lying in wait for whole days. My former taste now became a passion which disturbed even my hours of rest, and which daily grew stronger."

In 1765 the family of Le Vaillant left Surinam to return to Europe. "In the joy of my heart," says our author, "I partook of all the pleasures and projects of my parents during the voyage; a curiosity natural to my age, added to my transport. But this excitement did not render me insensible of regret; I could not so soon become ungrateful; my eyes were often cast back to the country where I received my being, to the shores which gradually lessened to my sight; and as I approached the frozen climates of the north, a profound melancholy overwhelmed me, preyed upon my spirit, and dissipated the promised enjoyments of the future.

"Arrived in Europe, all I beheld was new to me; and I showed so much impatience, fatiguing every one with questions, all around appearing to me so extraordinary, that I myself occasioned surprise; but my importunity did not always turn the laugh against me, for I paid amply, in keen remarks on America, the information I received about Europe.

"After some stay in Holland, we proceeded to Metz, where my favourite tastes had ample scope

for gratification in the cabinet of M. de Becœur, who possessed one of the finest collections of European birds I have seen. I had hitherto known no better method of preserving the skins of birds than by flattening them in large books; I now found that by stuffing them I could make them retain their natural forms.

"During a stay of two years in Germany, and seven in Lorraine and Alsace, I made prodigious havoc among the birds. I was also willing to be acquainted with their manners and the distinction of their various species, and have often passed whole weeks in watching to procure myself a pair. From long living among them, in fields, woods, and their most concealed retreats, I learned readily to distinguish the species as well as the sexes, and constantly gathered more and more information in this part of natural history, which, however, was far from contenting me. I longed to act on a more extended field, and only waited till occasion should serve."

What plan of education the parents of Le Vaillant had adopted, or whether they designed him for any profession, is not known. The only hint preserved on this subject is an incidental observation in his Travels, that his father insisted upon his acquiring a number of languages. Dutch he spoke fluently—probably learnt in childhood; German

and French it is said well, though his writings are alleged by critics to want the idiomatic precision of a native. In 1777 he went to Paris, where the rich collections of birds, and the writings and conversation of naturalists, at first attracted and then disappointed him. He was delighted with the varied wealth of collections from all quarters of the world which were opened to his inspection. But, accustomed to pry into the habits and economy of the living bird, the mere cataloguing and classifying of skins and skeletons soon became repulsive to him; and the inaccuracies of mere closet speculators nourished a perhaps overweening estimate of his own more living knowledge. This feeling, his sportsman's habits, the pleasant recollections of his boyhood in the forests of Guiana, all contributed to make him dwell with pleasure on the project of ransacking some yet unexplored regions of the earth, in order to search for their feathered inhabitants. With this object he quitted Paris, unknown to his friends, in July 1780. Like Audubon, he exclaims—"Neither the ties of love nor friendship (and he was now a married man) were able to shake my purpose. I communicated my projects to none, but, inexorable and blind to every obstacle, yielded to the passion that impelled me."

He accordingly repaired to Amsterdam, where he formed an intimate acquaintance with the cele-

brated Temminck, and, after five months spent in preparations, embarked in December for the Cape of Good Hope. Unhappily for Le Vaillant, war had just broken out between England and Holland. The vessels at the Cape were ordered to Saldanha Bay, to conceal them from English cruisers, and he accompanied them. An English squadron discovered their lurking-place, and the captain of the ship on board which the travelling equipage of the naturalist was embarked blew it up, to prevent its falling into the enemy's hands. By this misfortune Le Vaillant saw himself reduced to the brink of despair. Far from his adopted country, without friends, without shelter, almost without hope; his only resources were his gun, six ducats he had in his pocket, and the clothes he wore. In this extremity he was received by a friendly colonist, and treated most hospitably. Boers, a Dutch official, advanced everything necessary to fit him out for the expedition he proposed to make, and the Government officers did all they could to promote his enterprise.

During the three years he spent in the colony he made two excursions. The first was to the westward, at no great distance from the coast, to the Great Fish River. He ascended one of the branches of this stream to the frontier of the Gouaquois and Caffres, into whose country he

penetrated, returning by a more northerly route to Cape Town. His first book of Travels contains an account of this expedition. It is full of lively descriptions, pictures of his chases of the elephant and rhinoceros, of his faithful Hottentots, and of the various incidents of his life in the wilds.

As I have said, the simplicity and innocent boyish enthusiasm of Le Vaillant impart an air of romance to his pages. What, for example, can be more amusing than the following picture of a night scene in the wilds?—

"Returning one morning to the camp, I perceived a stranger on horseback advancing. It was a Hottentot with letters for me sent on from the Cape; they were the first I had received since my departure. These letters were from my dearest friend—my wife! I cannot describe my impatience on taking the packet from the messenger. Eagerly my eyes glanced over the lines. All were well and happy. I was beloved and regretted; affection followed me though in a desert, filling my heart with tender remembrances. . . .

"That night I was rather too generous in the distribution of my tobacco, having given my people enough to occasion intoxication; this, however, I was now contriving means to prevent. After having drank my tea, I ordered a box to be brought and placed before me, which, opening with an air

of mystery, I drew out that noble and melodious instrument a Jew's harp! and beginning to play a lively tune, the pipes of the Hottentots were instantly laid aside, and every one employed in gazing at me, with mouth half open, arms extended, and fingers stretched asunder. They might have furnished an excellent idea to a painter who wished to represent a group of figures struck by the powers of enchantment. Their astonishment was more than equalled by the pleasure they felt, as they listened intently that they might not lose a single sound.

"When I ceased playing, I gave the harp to the nearest Hottentot, but had some difficulty in teaching him how to use it, which, having accomplished, I sent him to his place, and not wishing to make any difference among them, gave one to each. Some played tolerably, some ill, some horribly; in truth, it was a discord that might have scared a set of furies; even my oxen, frightened at such an unusual noise, bellowed hideously; and in every part of our camp there was a mixture of sounds that exceeded description. At length, by a motion of my hand, I made them understand I had something to say. In an instant every one was silent. I then proposed that we should terminate our feast by drinking a bumper of brandy each to the health of our absent friends.

"This was a night of revels. Kees, my favourite monkey, was seated by my side—a place he never failed to avail himself of in the evening. Indeed, I had spoiled him, never eating or drinking anything but he came in for his share; and if I seemed inclined to forget him, he ever took care to remind me, either by munching or giving me a touch with his paw. He was equally fond of milk and brandy; the latter I always gave him on a plate, as I had remarked that, in drinking out of a glass, his greediness and precipitation made him draw as much up his nostrils as he took in at his mouth, which occasioned him to cough and sneeze for hours.

"Kees, as I have already said, was seated by my side, the plate before him ready for his share, while his eyes impatiently followed the brandy bottle, which the Hottentots served. With what eagerness did he wait his turn! Alas, the unfortunate rogue that licked his lips in advance did not know that he was going to taste that bewitching liquor for the last time; not that I lost my friend Kees, though in future I saved his portion of the brandy. I had packed up my despatches, and was putting on the last cover at the moment the bottle had finished its round, and reached my monkey. I determined for once to cheat him; but without any other intention than to amuse myself with his surprise.

The liquor had been just poured into the plate, and he was preparing to seize it, when I added, unseen, a piece of lighted paper; the brandy blazed immediately. Kees screamed and chattered, running away as fast as possible; it was in vain I called and endeavoured to coax him, for, being too angry to be easily pacified, he left us and went to his bed. The night was far advanced, and, after receiving the thanks of my people, all retired to rest. I must add, that fear had so completely taken possession of poor Kees that I could never succeed in making him forget what had happened, nor could I again prevail upon him to taste his formerly favourite liquor. Sometimes my men would tease him by showing him the brandy bottle, which was always enough to make him chatter and grind his teeth."

Of this animal Le Vaillant tells many an amusing story. He was very familiar and much attached to his master, who made him his taster; fruits, seeds, or roots, which Kees rejected, being infallibly unwholesome. His extreme vigilance rendered him an invaluable safeguard both day and night; the approach of danger roused him in an instant, and, before the dogs suspected the enemy was at hand, this faithful guardian, by his cries and frightened gestures, gave due warning. Le Vaillant says, "I often took him shooting with me. What gambols! what expressions of delight as he leaped upon and

caressed me! During our journey he would amuse himself with climbing the trees to search for gum, which he was very fond of; sometimes he discovered honey in the crevices of the rock, or in hollow trees. At other times he would dig for roots, and seemed particularly fond of a kind which, unluckily for him, I also found extremely good and refreshing, and persisted in partaking with him. Kees was artful, and if he happened to find any of this root when I was at a distance from him, in order to prevent my coming in for my share, would eat it up with the greatest eagerness, fixing at the same time his eyes ardently on me, and seeming to calculate, by the distance I was at, the time I should be getting to him. I observed his haste was ever in proportion to the danger he supposed he ran of losing part of his prize, and in general he was too quick for me.

"He had a very ingenious method of coming at these roots, which used to amuse me extremely. He took the tuft of leaves between his teeth, then, bearing upon his forepaws, forced back his head, and generally drew out the root to which they adhered. When this means failed, he again took hold of it closer to the earth, and giving a sudden spring, never failed to draw it up with him. In our walks, when he found himself fatigued, he would mount upon the back of one or other of my dogs, who

usually had the complaisance to carry him, even for hours together. But there was one among them bigger and stronger than the rest, and who ought rather to have offered his service on these occasions, yet had a droll method of getting rid of his burden. The moment he felt Kees upon his shoulders he became immoveable, and suffered me to proceed with the rest of the dogs without stirring from the spot. Kees, rather obstinate on his part, would usually maintain his seat till I had almost got out of sight, when, fearful of being left behind, he was constrained to alight, and then both monkey and dog used to set off full speed to rejoin us; but I observed the dog always let Kees keep ahead, taking care that he should not surprise him a second time. He had acquired over the rest of my pack an ascendency which was doubtless owing to the superiority of his instinct; for with animals, as among men, it is frequently observable, that address subdues strength."

Not less pleasing is Le Vaillant's account of his favourite ox Ingland. "He was the oldest and strongest beast I possessed; accordingly, he had successfully encountered the fatigue of my first journey, though during the whole route he had constantly occupied the thill to my heaviest and principal waggon. Distinguished by an instinct superior to the other animals of his species, my

people, when they unharnessed him, gave themselves no concern to prevent him from escaping; he wandered at will in the pasture, and was committed, if I may so express myself, to the guidance of his own understanding; there was no fear that he would wander from the place. When it was time to travel another stage it was unnecessary to fetch him from the pasture and bring him to the waggon, as was requisite for the rest; three smacks of the whip was our signal for march, and as soon as he heard them he came to his post. He was always the first to present himself to the traces, as if he had been afraid to lose his priority in a place which he had constantly been employed to occupy.

"If I went out for exercise, or to hunt, at my return Ingland, as far as he could see me, quitted his pasture, and ran towards me with a particular sort of bellowing, expressive of his joy. He rubbed his head against my body in different directions, and caressed me after his manner. Frequently he licked my hands, and I was constrained to stop long enough to receive his civilities, which sometimes lasted for a quarter of an hour. At length, when I had replied by my endearments and by a kiss, he led the way to my tent, and walked quietly before me.

"The evening before he died, Ingland lay down near the shaft of his waggon, and it was in this place he expired. I saw his last agonies, but was

unable to render him the slightest assistance. Ah! how frequently, when friendship has misled me, when seducing appearances have allured my confidence, have I thought of poor Ingland, and involuntarily cast my eye upon the hand he had so often licked!"

Le Vaillant, however, exceeded all his other portraitures in his picture of the fair Narina. Indeed, it has been said there is scarcely a more delicate creature in poetry than his young Gonaquoi girl. He was visited by a party of this horde, among whom were several women. "In the midst of them I remarked," he says, "a young girl about sixteen, who showed less eagerness to partake of the ornaments I bestowed on her companions, than to consider my person. She examined me with such marked attention, that I drew near to satisfy her curiosity. Her figure was charming, her teeth beautifully white, her height and shape elegant and easy, and might have served as a model for the pencil of Albano. In short, she was the youngest sister of the graces, under the figure of a female Hottentot.

"The force of beauty is universal; 'tis a sovereign whose power is unlimited. I felt by the prodigality of my presents that I paid some deference to its power. The young savage and myself were soon acquainted. I gave her a girdle, bracelets, and a necklace of small white beads which appeared to

delight her. I then took a red handkerchief from my neck, with which she bound her head; in this dress she was charming! I took pleasure in decorating her; which finished, she asked me for ornaments for her sister, who had remained at home. Nothing could equal the pleasure I took in seeing her, except it was in hearing her speak; for I was so charmed with her answers, that I fatigued her with interrogations. She was fully employed with her new decorations, examining her arms, feet, necklace, and girdle, twenty times feeling her head, and adjusting her handkerchief, with which she appeared much pleased. I set my glass before her; she viewed herself very attentively, and even with complacency, showing by her gestures how much she was satisfied, not particularly with her person, but her ornaments.

"My charming savage desired me to give her my looking-glass. I consented. She made good use of the empire her gentleness had acquired, to ask for all that gave her pleasure, notwithstanding I was obliged to deny her several things that were particularly useful to me, and might have been dangerous to her. My knee-buckles had tempted her; the most sparkling gems were not so brilliant as her expressive eyes. I should have been delighted to have given them. How much did I wish at that moment for the most miserable

fastenings to supply this useless luxury! Unhappily, they were the only pair I possessed. I made her comprehend that the buckles were absolutely necessary to me, from which moment she never named them. I found her name difficult to pronounce, disagreeable to the ear, and inapplicable to my ideas; I therefore renamed her Narina, which in the Hottentot language signifies a flower, desiring her to retain this name for my sake. She promised to keep it as long as she lived, in remembrance of me, and in testimony of her love—a sentiment that was no longer a stranger to her heart. This was truly painted in her gentle, unadorned language, which powerfully showed how strong the first impressions of nature are, and that even in the deserts of Africa there is no happiness without an alloy. . . . As evening approached, our fires were kindled, and I regaled my people with tea and coffee. Narina liked tea, but the colour of coffee disgusted her. I covered her eyes, therefore, with my hand, and got her to drink half a dish. She thought it good, but still preferred tea, drinking a great quantity, which much amazed me, for, notwithstanding her assertion that she liked it, she seemed to drink the tea in haste, in order to reach the sugar at the bottom. After this frugal meal, they returned to dancing till midnight, when fatigue obliged them to retire to rest."

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This introductory visit was followed by subsequent ones: and the sprightly, vivacious manners of "the gentle Narina" and her companions are prettily depicted by our traveller, who seems to have everywhere succeeded in conciliating the goodwill of the natives. This is not surprising, for he took the right means to attain this object, by his uniform kindness and good treatment of them, while he carefully avoided everything that might awaken their suspicion, or excite their displeasure.

Returning to the Cape, Le Vaillant spent some time in reposing from his fatigues, in arranging his collections, and in making preparation for a second exploration, which he commenced in April 1783. This time he advanced northward, and proceeded by the Orange River—how far is uncertain. With a small number of devoted Hottentots, who had been the companions of his former adventures, he proceeded into unknown and unexplored regions, and at length reached the Houswanas, or Boshmen, whose name spread terror among their neighbours. This second route was far more dangerous than the earlier one, and he suffered much from a violent attack of fever, which was cured by the treatment of a Namaquois doctor.

On his return to the Cape he contemplated a voyage to Madagascar, but relinquished the idea, and embarked for Europe, reaching Paris in Janu-

ary 1785. His first care was to arrange his cabinet, and prepare his journals for publication. He added a numerous list of animals, insects, and, above all, birds, to the then recognised species, and was the first to make the giraffe known in Europe. Before this time there had been only imperfect descriptions of it; Le Vaillant brought from Africa the one which was placed in the royal collection of Paris. In addition to his Travels, he published the "Natural History of the Birds of Africa;" which was followed by four other volumes on Parrots, Birds of Paradise, Cotingas, and Calaos. He had seen almost all the species he described in their native haunts, and his portraits are from the life. Like so many men of distinction and of science, Le Vaillant suffered under the terrible scourge of the French Revolution. He was incarcerated, and narrowly escaped the guillotine; in fact, he was only saved by the opportune death of Robespierre. After his liberation, he retired to a small property which he possessed at La Neve, near Lauzun; and there, except at brief intervals when he was obliged to visit Paris to superintend the publication of his works, he spent the remaining thirty years of his life. It was not to be expected that works brought out upon so expensive a scale should reimburse their author, still less that they should become a source of profit. Le Vail-

lant's zeal, however, was so uncalculating, that, while his patrimony was annually diminishing, he was still projecting publications which should, if possible, exceed those he had actually produced. At the conclusion of one of his volumes, he expresses a wish that his sons would complete the remaining portion. During the latter years of his life his circumstances, it is said, were rather straitened, which did not, however, affect his fine flow of spirits, his passion for birds, or his habitual contentment. On one occasion when Dr Leach visited him at Paris, he found him lodged in the upper étage of a house, when he jocosely observed, "The longer I live, the higher I rise in the world." This memorable man died on the 22d November 1824.

Scenes in the Life of Audubon.

EVERY individual possessed of a sound heart listens with delight to the love-notes of the woodland warblers. He never casts a glance upon their lovely forms without proposing to himself questions respecting them; nor does he look on the trees which they frequent, or the flowers over which they glide, without admiring their grandeur, or delighting in their sweet odours or their brilliant tints." These words are strikingly characteristic of him who wrote them, as we shall see when we have read the account given by himself of his own early life. "I received," says Mr Audubon, "life and light in the New World. When I had yet hardly learned to walk, and to articulate those first words always so endearing to parents, the productions of nature that lay spread all around were constantly pointed out to me. They soon became my playmates; and before my ideas were sufficiently

formed to enable me to estimate the difference between the azure tints of the sky and the emerald hue of the bright foliage, I felt that an intimacy with them, not consisting of friendship merely, but bordering on frenzy, must accompany my steps through life; and now, more than ever, I am persuaded of the power of those early impressions. They laid such hold upon me that, when removed from the woods, the prairies, and the brooks, or shut up from the view of the wide Atlantic, I experienced none of those pleasures most congenial to my mind. None but aërial companions suited my fancy. No roof seemed so secure to me as that formed of the dense foliage under which the feathered tribes were seen to resort, or the caves and fissures of the massy rocks to which the dark-winged cormorant and the curlew retired to rest, or to protect themselves from the fury of the tempest. . . . A vivid pleasure shone on those days of my early youth, attended with a calmness of feeling, that seldom failed to rivet my attention for hours, while I gazed in ecstasy upon the pearly and shining eggs, as they lay embedded in the softest down, or among dried leaves and twigs, or were exposed upon the burning sand or weather-beaten rocks of our Atlantic shores. I was taught to look upon them as flowers yet in the bud. I watched their opening to see how nature had provided each different species with

eyes, either open at birth or closed for some time after, to trace the slow progress of the young birds toward perfection, or admire the celerity with which some of them, while yet unfledged, removed themselves from danger to security."

As he grew up these predilections became yet stronger, and he early commenced a collection of drawings, which at first were but the rude attempts of an unpractised hand. He thus amusingly characterises them: "My pencil gave birth to a family of cripples. So maimed were most of them, that they resembled the mangled corpses on a field of battle compared with the integrity of living men. These difficulties and disappointments irritated me, but never for a moment destroyed the desire of obtaining perfect representations of nature. The worse my drawings were, the more beautiful did I see the originals. To have been torn from the study would have been as death to me. My time was entirely occupied with it. I produced hundreds of these rude sketches annually, and for a long time, at my request, they made bonfires on the anniversaries of my birthday."

Anxious to cultivate a talent which had so strikingly evinced itself, the friends of young Audubon procured him the best instruction, and he was early sent to France, where, under the guidance of the celebrated David, he became a skilful draughtsman.

"Eyes and noses belonging to giants, and heads of horses represented in ancient sculpture," which had been his models under this master, were immediately laid aside by the youthful naturalist when, in his seventeenth year, he returned to America, and with fresh ardour he resumed his researches in the woods of his native land, and commenced a collection of drawings which year by year accumulated, and were at length published under the title of "The Birds of America."

He has given a romantic picture of his subsequent career. It commences thus: "In Pennsylvania, a beautiful state, almost central on the line of our Atlantic shores, my father, in his desire of proving my friend through life, gave me what Americans call a beautiful 'plantation,' refreshed during the summer-heats by the waters of the Schuylkil river, and traversed by a creek named Perkisming. Its fine woodlands, its extensive fields, its hills, crowned with evergreens, offered many subjects to my pencil. It was there that I commenced my simple and agreeable studies, with as little concern about the future as if the world had been made for me. My rambles invariably commenced at break of day; and to return wet with dew, and bearing a feathered prize, was, and ever will be, the highest enjoyment for which I have been fitted."

In process of time our enthusiast married, and became a family man. He relates that for a long period (of nearly twenty years) his life was a succession of vicissitudes. He tried various branches of commerce, but they all proved unprofitable—doubtless, as he himself acknowledges, because his mind was filled constantly with a passion for rambling in search of those objects from which his taste derived the highest gratification; and the result was that he proceeded, in opposition to the advice and remonstrances of his friends, to break through all bonds, and give himself up wholly to his favourite pursuit. Any one, he says, who had then watched his course, would have pronounced him callous to every sense of duty; and regardless of the interests of his wife and children, he undertook long and tedious journeys, ransacked the woods, the lakes, the prairies, and the shores of the Atlantic, and spent years away from his family; and all this, as he distinctly states, *simply to enjoy the sight of nature*, for at that time he had formed no intention of communicating his observations to the world.

An acquaintance accidentally formed with Prince Lucien Bonaparte, the distinguished naturalist, was the means of directing Mr Audubon's thoughts to the publication of his great work, and determined him, for that purpose, to carry his collection

to Europe; but, before his preparations were completed, an unparalleled misfortune threatened to destroy all his prospects and blight his hopes. The occurrence is thus related by him: "An accident which happened to 200 of my original drawings nearly put a stop to my researches in ornithology. I shall relate it merely to show how far enthusiasm —for by no other name can I call the persevering zeal with which I laboured—may enable the observer of nature to surmount the most disheartening obstacles. I left the village of Henderson, in Kentucky, situated on the bank of the Ohio, where I resided for several years, to proceed to Philadelphia on business. I looked to all my drawings before my departure, placed them carefully in a wooden box, and gave them in charge to a relative, with injunctions to see that no injury should happen to them. My absence was of several months; and when I returned, after having enjoyed the pleasures of home for a few days, I inquired after my box, and what I was pleased to call my treasure. The box was produced and opened; but —readers, feel for me—a pair of Norway rats had taken possession of the whole, and had reared a young family amongst the gnawed pieces of paper, which, but a few months before, represented nearly a thousand inhabitants of the air! The burning heat which instantly rushed through my brain was

too great to be endured, without affecting the whole of my nervous system. I slept not for several nights, and days passed like the days of oblivion, until the animal powers, being recalled into action through the strength of my constitution, I took up my gun, my note-books, and my pencils, and went gaily forth to the woods as if nothing had happened. I felt pleased that I might now make much better drawings than before; and ere a period not exceeding three years had elapsed, I had my portfolio filled again!"

It will be readily believed that such surprising energy, industry and zeal, were crowned with success. All the world knows how admirably he has depicted the objects he loved so well. This "Ornithological Biography" is a series of exquisite portraits of the feathered tribes, and its interest is enhanced by numerous lively and graphic sketches of American scenery and manners, which are interspersed through the volumes. Some of these give an occasional glimpse of the writer's adventures during his wanderings, and they partake not a little of the romantic. For example, he gives us this picture of

The Prairie.

"On my return from the Upper Mississippi, I found myself obliged to cross one of the wide

prairies which in that portion of the United States vary the appearance of the country. The weather was fine; all around me was fresh and blooming. My knapsack, my gun, and my dog, were all I had for baggage or for company. But, although well moccassined, I moved slowly along, attracted by the brilliancy of the flowers and the gambols of the fawns around their dams, to all appearance as thoughtless of danger as I felt myself.

"My march was of long duration. I saw the sun sinking beneath the horizon long before I could perceive any appearance of woodland, and nothing in the shape of man had I met that day. The track which I followed was only an old Indian trace, and as darkness overshadowed the prairie, I felt some desire to reach at least a copse in which I might lie down to rest. Shortly after, a firelight attracted my eye. I moved towards it, full of confidence that it proceeded from the camp of some wandering Indians. I was mistaken. I discovered by its glare that it was from the hearth of a small log cabin, and that a tall figure passed and repassed between it and me, as if busily engaged in household arrangements. I reached the spot, and, presenting myself at the door, asked the tall figure, which proved to be a woman, if I might take shelter under her roof for the night. Her voice was gruff, and her attire negligently thrown about her.

She answered in the affirmative. I walked in, took a wooden stool, and quietly seated myself beside the fire. The next object I observed was a finely formed young Indian, resting his head between his hands, with his elbows on his knees. A long bow rested against the log wall near him, while a quantity of arrows and two or three racoon-skins lay at his feet. He moved not; he apparently breathed not. Accustomed to the habits of the Indians, and knowing that they pay little attention to the approach of civilised strangers, I addressed him in French, a language not unfrequently partially known to the people in that neighbourhood. He raised his head, pointed to one of his eyes, and gave me a significant glance with the other. His face was covered with blood. The fact was, that an hour before, as he was in the act of discharging an arrow at a racoon in the top of a tree, the arrow had split upon the cord, and sprung back with such violence into his right eye as to destroy it for ever.

"Feeling hungry, I inquired what sort of fare I might expect. Such a thing as a bed was not to be seen, but many large untanned bear and buffalo hides lay piled in a corner. I drew a fine time-piece from my breast, and told the woman that it was late, and that I was fatigued. She had espied the watch, the richness of which seemed to operate

upon her feelings with electric quickness. She told me that there was plenty of venison and jerked buffalo meat, and that, on removing the ashes, I should find a cake. I helped my dog to a good supper of venison, and was not long in satisfying the demands of my own appetite.

"The Indian rose from his seat, as if in extreme suffering. He passed and repassed me several times, and once pinched me on the side so violently that the pain nearly brought forth an exclamation of anger. I looked at him; his eye met mine, but his look was so forbidding that it struck a chill into the more nervous part of my system. He again seated himself, drew his butcher-knife from its greasy scabbard, examined its edge as I would do that of a razor suspected dull, replaced it, and again taking his tomahawk from his back, filled the pipe of it with tobacco, and sent me expressive glances whenever our hostess chanced to have her back towards us.

"Never until that moment had my senses been awakened to the danger which I now suspected to be about me. I returned glance for glance to my companion, and rested well assured that, whatever enemies I might have, he was not of the number. Under the pretence of wishing to see how the weather was, I took up my gun and walked out of the cabin. I slipped a ball into each barrel, scraped

the edges of my flints, renewed the primings, and returning to the hut, gave a favourable account of my observations. I took a few bear-skins, made a pallet of them, and calling my faithful dog to my side, lay down, with my gun close to my body, and in a few minutes was to all appearance fast asleep.

"A short time had elapsed when some voices were heard, and from the corner of my eyes I saw two athletic youths making their entrance, bearing a dead stag on a pole. They disposed of their burden, and asking for whisky, helped themselves freely to it. Observing me and the wounded Indian, they asked who I was, and why that rascal (meaning the Indian, who, they knew, understood not a word of English) was in the house. The mother—for so she proved to be—bade them speak less loudly, made mention of my watch, and took them to a corner, where a conversation took place. The last words reached me—"That will soon settle him! Boys, kill you; and then for the watch."

"I turned, cocked my gun-locks silently, and tapped gently my faithful dog, who moved his tail and fixed his eyes alternately on me and on the trio in the corner. I lay ready to start up and shoot the first who might attempt my life. The moment was fast approaching, and that night might have been my last in this world, had not Providence

made preparations for my rescue. All was ready. The murderous hag was advancing slowly, probably contemplating the best way of despatching me, while her sons should be engaged with the Indian. I was several times on the eve of rising and shooting her on the spot; but she was not to be punished thus. The door was suddenly opened, and there entered two stout travellers, each with a long rifle on his shoulder. I flew to my feet, and making them most heartily welcome, told them how well it was for me that they should have arrived at that moment. The tale was told in a minute. The drunken sons were secured, and the woman, in spite of her defence and vociferations, shared the same fate. The Indian fairly danced with joy, and gave us to understand that, as he could not sleep for pain, he would watch over us. You may suppose we slept much less than we talked. The two strangers gave me an account of their once having been themselves in a somewhat similar situation. Day came, fair and rosy, and with it the punishment of our captives.

"They were now quite sobered. Their feet were unbound, but their arms were still securely tied. We marched them into the woods off the road, and having used them as Regulators* were wont to use

* *Regulators.* A sort of rural police, organised for the purpose of preserving order on the frontiers, and invested with powers to in-

such delinquents, we set fire to the cabin, gave the skins and implements to the young Indian warrior, and proceeded, well pleased, toward the settlement."

Mr Audubon concludes his narrative by saying that, during upwards of twenty-five years' wanderings through all parts of the country, this was the only time his life was endangered from his fellow-creatures. He could only account for this occurrence by supposing that the inhabitants of the cabin were not Americans.

On another occasion our naturalist encountered an adventure of by no means an agreeable kind, though he seems to have made light of it, and even to have turned it to good account. Travelling one day, on the shores of Upper Canada, with a friend, he was robbed of his purse, and left at a distance of 1500 miles from home with just seven and a-half dollars between them. After travelling two days, and meeting with various adventures, the two companions reached Meadville, by which time their cash was reduced to one hundred and fifty cents. No time was to be lost. They accordingly put their baggage and themselves under the roof of a tavern-keeper at the sign of the "Traveller's Rest," and soon after took a walk to survey the little village

flict adequate punishment on evil-doers. This is generally a severe castigation of the guilty, and the destruction of his cabin.

that was to be laid under contribution for their further support. "Its appearance," says Audubon, "was rather dull; but, thanks to God, I have never despaired, while rambling thus, for the sole purpose of admiring His grand and beautiful works. I had opened the case that contained my drawings, and putting my portfolio under my arm, and a few good credentials in my pocket, walked up Main Street, looking to the right and left, examining the different *heads* which occurred, until I fixed my eyes on a gentleman in a store, who looked as if he might want a sketch. I begged him to allow me to sit down. This granted, I remained purposely silent, until he very soon asked me what was '*in that portfolio.*' These three words sounded well, and without waiting another instant, I opened it to his view. This was a Hollander, who complimented me much on the execution of the drawings of birds and flowers in my portfolio. Showing him a sketch of a friend, I asked him if he would like one in the same style of himself. He not only answered in the affirmative, but assured me that he would exert himself in procuring as many more customers as he could. I thanked him, and having fixed upon the next morning for drawing the sketch, I returned to the 'Traveller's Rest,' with the hope that to-morrow might prove propitious. Supper was ready, and as in America we have generally but

one sort of table d'hôte, we sat down, when, every individual looking upon me as a missionary priest, on account of my hair, which in those days flowed loosely on my shoulders, I was asked to say grace, which I did with a fervent spirit.

"Daylight returned. I visited the groves and woods around with my companion, returned, breakfasted, and went to the store, where, notwithstanding my ardent desire to begin my task, it was ten o'clock before the sitter was ready. But, reader, allow me to describe the *artist's room.* See me ascending a crazy flight of steps, from the back part of a storeroom into a large garret, extending over the store and counting room, and mark me looking round to see how the light could be stopped from obtruding on me through no less than four windows facing each other at right angles. Then follow me, scrutinising the corners, and finding in one a cat nursing her young, among a heap of rags intended for the paper-mill. Two hogsheads filled with oats, a parcel of Dutch toys carelessly thrown on the floor, a large drum and a bassoon in another part, fur caps hanging along the wall, and the portable bed of the merchant's clerk swinging like a hammock near the centre, together with some rolls of sole leather, made up the picture. I saw all this at a glance, and closing the extra windows with blankets, I soon procured *a painter's light.*

"A young gentleman sat to try my skill. I finished his phiz, which was approved of. The merchant then took the chair, and I had the good fortune to please him also. The room became crowded with the gentry of the village. Some laughed, while others expressed their wonder; but my work went on notwithstanding the observations that were made. My sitter invited me to spend the evening with him, which I did, and joined him in some music on the flute and violin. I returned to my companion with great pleasure; and you may judge how much that pleasure was increased when I found that he also had made two sketches.

"The following day was spent much in the same manner. I felt highly gratified that from under my grey coat my talents had made their way, and I was pleased to discover that industry and moderate abilities prove at least as valuable as first-rate talents without the former of these qualities. We left Meadville on foot, having forwarded our baggage by waggon. Our hearts were light, our pockets replenished, and we walked in two days to Pittsburgh, as happy as circumstances permitted us to be."

Audubon mentions with evident delight the reception he met with in England. Everywhere he experienced cordiality and ready patronage; and before long, artists, men of science, and professors,

were among the list of his subscribers. He visited Scotland, and felt delighted with the natural beauties of that northern land, where he found not a few of his warmest admirers and steadfast friends.

The pages of Professor Wilson contain a pleasing testimony to the favourable impression the great naturalist produced among some of the choice spirits of the Scottish capital.*

"We were sitting one night lately," he says, "all alone by ourselves, almost unconsciously eyeing the embers, fire without flame, in the many-visioned grate, but at times aware of the symbols and emblems there beautifully built up of the on-goings of human life, when a knocking, not loud but resolute, came to the front-door. At first we supposed it might be some late home-going knight-errant, from a feast of shells, in a mood between 'malice and true love,' seeking to disquiet the slumbers of old Christopher, in expectation of seeing his nightcap popped out of the window, simulating a scold upon the audacious sleep-breaker. So we benevolently laid back our head on our easy chair, and pursued our speculations on the state of affairs in general. . . But the knocking would not leave off; and, listening to its character, we felt assured it came from the fist of a friend. So we gathered up our slippered feet from the rug,

* *Noctes Ambrosianæ.*

lamp in hand, stalked along the lobbies, unchained and unlocked the oak which our faithful night-porter Somnus had sported—and, lo! a figure muffled up in a cloak, and furred like a Russ, advanced familiarly into the hall, extended both hands, bade God bless us, and pronounced, with somewhat of a foreign accent, the name in which we and the world rejoiced—'Christopher North!' We were not slow in returning the hug fraternal, for who was it but the 'American woodsman?'—even Audubon himself,—fresh from the Floridas, and breathing of the pure air of far-off Labrador!

"Three years and upwards had fled since we had taken farewell of the illustrious ornithologist, on the same spot, at the same hour; and there was something ghost-like in such return of a dear friend from a distant region almost as from the land of spirits. . . . In less time than we have taken to write it we two were sitting cheek by jowl, and hand in hand, by that essential fire—while we showed by our looks that we both felt, now they were over, that three years are but as one day!"

The rites of hospitality being fitly observed, the friends scanned each other's appearance, and "Audubon found an opportunity of telling us that he had never seen us in a higher state of preservation; and, in a low voice, whispered something about the 'Eagle renewing his youth.' We acknowledged

the kindness by a remark on bold bright birds of passage that find the seasons obedient to their will, and wing their way through worlds, still rejoicing in the perfect year. But too true friends were we not to be sincere in all we seriously said; and while Audubon confessed that he saw rather more plainly than when we parted the crowfeet in the corner of our eyes, we did not deny that we saw in him an image of the Falco Leucocephalus; for that, looking on his 'carum caput,' it answered his own description of that handsome and powerful bird—viz., 'The general colour of the plumage above is dull hair-brown, the lower parts being deeply brown, broadly margined with grayish white.' But here he corrected us, for 'Surely, my dear friend,' quoth he, 'you must admit that I am a living specimen of the adult bird, and you remember my description of him in my first volume.' And thus, blending our gravities and our gaieties, we sat facing each other. . . . It was quite a Noctes. Audubon told us, by snatches, all his travels, history, and many an anecdote interspersed, of the dwellers among the woods—birds, beasts, and man."

Another lively picture is drawn of him by some travellers, who, during a journey by canal route from Philadelphia, chanced through good fortune to have Audubon for their companion. . . . "He is actually in this very cabin," said one of

the number; "there," he added, pointing to a huge pile of blankets and fur, which, stretched upon one of the benches, looked like the substantial bale of some trader. "What! *that* Mr Audubon!" exclaimed the travellers, whose names were at that moment called out by the captain as entitled to the first choice of berths. This privilege they now gladly renounced in favour of Audubon. Thereupon the green ball stirred a little, half turned upon its narrow resting-place, after awhile sat erect, and showed that there was a man inside of it. A patriarchal beard fell white and wavy down his breast; a pair of hawk-like eyes gleamed sharply out from the frizzy shroud of cap and collar. With a thrill of irrepressible interest the travellers approached. The moment they caught sight of that fine expressive face, they knew it could be none but he. Audubon it was, in this wilderness garb, hale and alert, with sixty winters on his shoulders, and, like one of his old eagles, "feathered to the heel." Before long, he delighted them with relating his exploits, discoveries, and experiences. Somewhat silent in general, his conversation was impulsive and fragmentary, and a "mellow Gallic idiom" marked his speech.

When on shore, he speedily outstripped his younger companions in walking, while the clearness and strength of his vision were truly amazing.

One fine morning, when passing through a particularly lovely region, his keen eye, with an eager, intent expression peculiarly its own, was gazing over the scenery, when, suddenly, he pointed with his finger to the fence of a field, about 200 yards off, exclaiming, "See, yonder is a fox-squirrel running along the top rail; it is not often I have seen one in Pennsylvania." As not another individual in the group could perceive the creature at all, his companions somewhat incredulously asked him if he were *sure* that it was a fox-squirrel.

Audubon smiled, as, turning his eagle glance upon them, he answered, "Ah! I have an Indian's eyes."

The great ornithologist had the happiness to see the accomplishment of his long pursued and deeply cherished project. He completed the publication of the fifth and last volume of his great work during the year 1839. He was then in his sixty-fourth year. Often had he (to use his own expression) longed to see the day on which his labours should be brought to an end; and this cherished desire being fulfilled, he lo d up "with gratitude to the Supreme Being, and felt that he was happy."

He lived to the age of seventy-six; his death taking place on the 27th January 1851.

Voyages of François Peron, the Zoologist.

SOME years ago, a missionary party dined one day at our house. Among the guests were two natives of the South Seas, who had accompanied their teacher on a voyage to England, and who were then itinerating with him through the provinces. The weather was very cold, for it was early spring, and the poor natives of those warm regions suffered from the chills of our ungenial climate. During the dinner I watched with curiosity the faces of these reformed savages, whose huge mouths and dazzling teeth reminded me of the terrible fact that they had been originally cannibals; and it was with some alarm I saw them introduced by their guardian to the drawing-room, and left alone with my mother and myself till the gentlemen should have finished their after-dinner business. The first act of the chief, who was evidently a gentleman by nature, was to wave his hand towards the fire,

from which we had retreated to make him room. He would by no means displace us, and we resumed our seats. His companion, who was younger, was plainly of an inferior grade. He appeared lively and in health, while there was an aspect of suffering and reserve about the chief which interested us more in him. How to amuse them? We pointed to the snow, which was falling fast, and inquired, "Have you seen snow before you came to England?"

"Oh! yes," said the young one, "at the Cape, snow came—sunshine—puff!—all gone!"

We then produced a hamper containing a kitten, and opening the lid, placed it on the hearth-rug, when the animal emerged.

"Puss!" cried the lively savage.

"You have them in your country?"

"O yes, madame."

But the chief was uninterested, and we wanted to see him stirred. At length I remembered Peron's "Voyage aux Terres Australes," and hastening to fetch it from my father's bookshelves, laid it on the table, and opened it at the picture of the young chieftain of New Holland, Nourougal-dirri, "s'avançant pour combattre." The moment he cast his eyes on this picture, the junior savage uttered a loud cry in his own tongue, which had the effect of bringing his companion in a

moment to his side, and the two began, in their soft, liquid, rolling language, conversing with the utmost vivacity, pointing with their fingers to each of the plates, and showing, by the expression of their countenances, that they felt, indeed, alive!

"Ah! you would like to return to the South Sea Islands; is it not so?"

"Yes! yes!"

There was no mistake about it; they were pining for their distant land, and for the sunny skies of the south. Alas! the chief was not destined again to behold them, for he died not many weeks afterwards, "a stranger in a strange land," and without even the solace of his fellow-countryman's presence in his last moments. It was not apprehended that his end was at hand, and they were at a distance from each other. The missionary's wife alone was present to soothe the dying pillow, and to point the eye of the Christian South Sea Islander to the heavenly home, where he is now, it is humbly hoped, numbered with "the great multitude of all nations, and kindreds, and people, and tongues, who have washed their robes, and made them white in the blood of the Lamb."

At the time when this incident occurred, I was not acquainted with the narrative of Peron's expedition, and though I had often admired the exquisitely beautiful coloured figures of zoophytes in

some of the plates of his work, knew not at what cost the originals had been procured. In the slight sketch now about to be given of this most enthusiastic zoologist, the reader will see an example of almost unequalled devotedness and zeal.

François Peron was born 22d August 1775, at Perilly, a small town in the Bourbonnais. The death of his father left him unprovided for, and his relatives were desirous that he should be taught some lucrative business. Already the boy had shown intense love of books and study, and, disconsolate at the idea of being shut out from the acquirement of information, he prevailed on his mother to send him to the college of Cerilly, where the principal, charmed with the intelligence of his pupil, paid particular attention to his education, and when his preliminary studies were finished advised him to become an ecclesiastic, with which intention he was placed under the care of the curé of the town, who was to instruct him in philosophy and theology.

Just at this time the Revolution broke out, and young Peron, seduced by the exalted pictures of patriotism he had read in ancient history, determined to take his share in the mighty conflict, and to embrace the cause of Liberty. He accordingly left his home at the close of 1792, and enrolled himself in the battalion of L'Allier. He was but

seventeen when he took this ill-advised step. Shortly after he was sent to the army of the Rhine, and proceeded to Laudau, where he beheld war in all its terrors. The siege of this place being raised, he rejoined the army, which encountered the Prussians at Weissenburg, and was also present at the defeat of Kaiserslautern. In this affair Peron was wounded and taken prisoner, being carried first to Wesel and then to Magdeburg. This season of forced retirement was turned by the young enthusiast to good account. He had never ceased to pursue his studies at every moment of leisure, and now read with avidity such books as he could procure, principally narratives of voyages and travels, and history.

At the close of 1794 he was liberated from prison, and discharged from the army on account of the loss of an eye, occasioned by the wounds he had received in battle.

The three following years saw him an assiduous student at the Medical School of Paris, where he especially devoted himself to zoology and comparative anatomy, in which his rapid progress astonished his associates. There was every prospect of his attaining eminence in this department of science, when all his anticipations were suddenly blighted, in consequence of an ardent attachment, in which he was doomed to disappointment. The

result was a settled resolve to quit the scene of his mortification and distress, and to fly from his native land.

Casting about for the means by which he might be enabled to effect his purpose, he learned that the Government was on the point of despatching an expedition to explore the southern hemisphere. With considerable difficulty, through the friendly assistance of MM. Jussieu and Lacépède, he obtained an engagement in the service. The number of savants was already completed, but at his earnest representation of the importance of adding a medical naturalist to the staff this post was assigned to him, and on the 19th October 1800 he sailed with the expedition, which consisted of two frigates, the Naturalist and the Geographé; Peron, with most of the savants, being on board the latter vessel. His biographer in the "Naturalist's Library" thus pleasingly relates the incidents of the voyage:—"Though several campaigns had familiarised M. Peron with privation, yet, on board ship, he found himself more put about than he anticipated. Having arrived after all the others were accommodated, he found only a pitiful corner left for him; however, in the midst of agitation and bustle, he retained all his composure and self-possession, and did not lose a moment. The very day he went on board he commenced his meteorological obser-

vations, which he constantly repeated every six hours, and which were never interrupted during the whole course of the voyage. Shortly after sailing, he made some important experiments regarding the temperature of the water of the ocean, which demonstrated it was colder in proportion as the depth increased. On reaching the equator, the whole crew were greatly astonished by an appearance which presented itself. One night, when the heavens were very dark and cloudy, a bright band, as of phosphorus, covered the water at the horizon; presently the ocean seemed in a flame, and sparks of fire appeared to rise from the surface."

At first the voyagers supposed this to be the aurora borealis, which they had not seen; but, on advancing, they discovered the luminosity was produced by a countless multitude of small animals, which appeared like sparks of fire. "The whole surface of the ocean," says Peron, describing this phenomenon, "sparkles and shines everywhere like a silver stuff, electrified in the dark. Here the waves roll out in immense sheets of sulphur and bitumen in flames; there, again, the sea resembles a vast ocean of milk, the limits of which are lost in the horizon. Brilliant stars by myriads spring from the depths, of which our fireworks are but a feeble imitation. Masses of fire roll over the

waves like so many red-hot balls, one of which we observed apparently not less than twenty feet in diameter. In some places columns of fire, eliciting sparks, are thrown up from the bosom of the deep; in others, clouds of light and phosphorus are seen traversing the waves in the midst of darkness; added to which are cones of light revolving round their own axes, splendid garlands, incandescent parallelograms, and serpentining illuminations. Occasionally the ocean appears decorated with an immense scarf of moveable and wavy light, the ends of which exceed the limits of sight." What were all the marvels of the enchanted grotto compared with these exquisite natural illuminations exhibited on the mighty waves of the sea! The impression which this wonderful phenomenon made on our naturalist, and the peculiarities presented by the organisation of these zoophytes, which, on examination, he found to assume successively all the colours of the rainbow, determined him to investigate this class of animals; and during the whole voyage he and M. Lesueur, one of his companion savants with whom he formed a close friendship, were ever watching at the ship's side, that they might collect all they could procure. Peron was no great artist himself, but his friend drew, under his direction, those varied and beautiful animals. "The two laboured in concert; the one

painted, the other described. In their work they had but one soul, and neither wished to exalt himself at the expense of the other." At the end of five months they reached the Isle of France, where they completed their stores for the Antarctic seas; and some of the naturalists, being dissatisfied with the treatment they received and the general arrangements, declined to proceed; but Peron considered himself bound by his engagements. Arrived on the western shores of New Holland, the expedition skirted along the coast, surveying many harbours, and anchored for refreshment at the island of Timor. It is chiefly to Peron's stay in this place, so little known to naturalists, that we are indebted to his labours on the mollusca and zoophytes. The sea is shallow, and the excessive heat seems to multiply prodigiously these singular animals, and to adorn them with the most brilliant hues. Nothing can exceed the rapturous descriptions given of them by our enthusiast. He waxes eloquent as he paints their beauties, and the reader is disposed to share his admiration while he studies his charming portraits. "What shall I say," he exclaims, "of these various species of zoophytes which, by the singularity of their form, their extraordinary organisation, the beauty of their hues, and the variety of their habitudes, so richly merit the attention of the enlightened part of the commu-

nity. Shall I speak, for example, of the vetelles, which present the appearance of a small wherry with its bottom upwards, on the back of which rises a sort of crest, extremely thin, light, and transparent, which is a large sail, serving the animal to direct its movements, and to vary and increase its velocity. Always keeping close to the wind, this elegant azure boat advances in order, tacks with rapidity, and changes its course according to its pleasure or need, and rarely fails of attaining the prey it pursues. The elegance of the form of this creature, the transparency of its sail, the beautiful mantle of blue with which it is clad, all concur to render it one of the most pleasing of the species; indeed, nothing can afford a more charming picture than these animals, when, in calm weather, they manœuvre by thousands on the surface of the sea, resembling so many gay miniature flotillas.

"In the Beroes, nature seems to have exhausted herself to produce the utmost grace and brilliancy in the perfection of the figure, the richness of the hues, and the variety of the movements. Their substance, more pellucid than the clearest crystal, is generally of a beautiful rose, opal, or azure colour. Their form is more or less spheroidic; eight or ten longitudinal ribs are disposed around it, each formed of a prodigious number of small

transversal leaves, extremely thin, and of astonishing mobility. These constitute the essential organs of motion of the animal. By the aid of these myriads of little paddles it directs its course and executes its manœuvres. What is still more admirable in this species, light being decomposed by its various and rapid movements, its longitudinal ribs become so many living prisms, and envelop the animal like eight or ten rainbows, so brilliant and so undulating that it is vain to attempt to describe its beauty. What shall I say, too, of another kind, which, resembling a beautiful wreath of crystal of an azure hue, swims on the surface of the waves, and lifts above them in succession its diaphanous leaflets, in figure resembling those of ivy, while it stretches around its exquisite rosy feelers? This, more than the majority of animals of this class, possesses the phosphorescent quality in an unusually lively and splendid degree, and which, in the midst of the darkness, gives it the similitude of a garland of fire and light. Shall I attempt to describe those Tanthines, of a purple colour, which make their way over the surface of the waves suspended by a white bunch of airy bladders? or those numerous legions of Salpæ, of a rosy, azure, or an opal colour, which form floats of thirty or forty leagues in extent, and shine with splendour in the dark? or those Medusæ, equally phosphorescent, which pre-

sent so many singular forms—so many delicate shades of colour? Besides these are the Pyrosomes, shaped like an enormous finger of a glove, which cover the sea with their innumerable hosts; and those charming Glauci, of an ultramarine blue, with a silver band on the back, which resemble so many pelagic lizards, with those Hyales, which, protected only by a shell extremely thin, fragile, light, diaphanous, and horny, yet delight in the stormy waves of the Southern Ocean. One is tempted to take these beautiful mollusca, on seeing them display their purple fins, for so many turtle in miniature, and, in fact, it is by that name they are designated by sailors."

In pursuit of these attractive objects, Peron spent nearly the whole day on the shore, plunging into the water in the midst of the surf, always at the danger of his health, and sometimes of his life, and with the shadows of evening returning laden with numerous specimens, of which his friend sketched the most remarkable.

Nor did he confine himself to these researches. He spent much time in visiting the interior of the island and examining the aborigines. Though ignorant of their language, he had so much tact in catching the meaning of the natives, and in expressing himself by lively gestures, that to a great extent he was able to communicate with

them; and he was equally successful with the savages of New Holland and Van Diemen's Land.

On leaving Timor, the expedition sailed for the Bass Straits and the south coast of New Holland. Here they suffered extremely; and when they reached Port Jackson, their condition, from privation and disease, was such that only four of the crew could perform duty; so that, had they been detained a few days longer at sea, they must all have perished.

After a sufficient period of rest at Port Jackson, a second voyage, no less hazardous than the first, was undertaken. The Geographé proceeded to examine the islands of Bass Straits, and to explore the coast of New Holland. During this expedition, Peron especially displayed remarkable courage and activity. Of the five zoologists who had been appointed by Government, two having remained at the Isle of France and two having died in the course of the second voyage, on him alone devolved the performance of the duty; and he proved himself equal to all, regardless of the privations to which he was exposed. Shortly after their departure from Timor, the captain having refused the spirits which were necessary for the preservation of the mollusca that were collected, he appropriated the whole of his personal allowance to this purpose, and, what was still more remarkable, he communi-

cated his enthusiasm to many of his comrades, who followed his example and made the same sacrifice. A touching entry in his diary shows that his zeal was equalled by others of the devoted band. He had been passing a day upon an island, and returned loaded with a rich harvest of zoological specimens. "At sight of this numerous and magnificent collection," he writes, "my unfortunate colleague Maugé was unable to restrain his tears. Notwithstanding his exhausted and consumptive state, he resolved next day to go on shore himself to seek new specimens; but alas! he listened but to his zeal and courage—his dying frame was unequal to the effort. Scarcely had he reached the strand before he fainted, and was immediately carried back on board in such a state of debility that his life was for a while despaired of. This was the last instance of his zeal; he went no more on shore but to the grave."

It was especially in the midst of such dangers that Peron exhibited the energy of his character and his devoted zeal in the pursuit of his object. During storms he used to work as a common sailor, and all the time would be observing with perfect composure. No event ever diverted his attention from his beloved pursuit. Having landed upon King's Island with several of his companions, a sudden gale drove the ship to sea, and they saw

nothing of it for fifteen days. Peron did not for an instant lose his self-possession, but patiently prosecuted his researches, and, during his stay on this island, he, without shelter, and in despite of the violence of the tempests, collected more than 180 species of mollusca and zoophytes, and studied, besides, the history of those gigantic seals the Proboscidæ, which assemble in thousands upon these coasts.

At length, after an absence of three years and a half, he returned to France in April 1804, and immediately proceeded to Paris. He was there engaged for several months in arranging his specimens and preparing the catalogue, after which they were all deposited in the Museum. The whole collection was found on examination to contain more than 100,000 different animals, among which were many new genera; and the Commission reported that the number of new species was more than 2500, and that Peron and Lesueur alone had made us acquainted with more animals than the whole of the travelling naturalists of modern times. In due time the first volume of his "Voyage aux Australes" appeared, and an opportunity was then afforded of judging of his merits.

Peron did not live to complete the second volume. His health was broken by prolonged suffering and privation, and he sank speedily under

an attack of pulmonary disease, expiring on the 14th December 1810, being only in his thirty-fifth year—"another proof that science has its martyrs, and that its surest victims are often its most ardent and successful votaries."

Bayard Taylor in the "Northern Land."

WHEN a young man, Linnæus travelled over the greater part of Lapland, skirting the boundaries of Norway. During this journey he mentions, as one of the most surprising and admirable sights he had ever beheld, the phenomenon called The Midnight Sun. "I proceeded," he says, "with all haste, in order, if it were possible, to reach the Alps of Lulean Lapland in time to see the sun above the horizon at midnight, which is beheld there to the best advantage. I reached those mountains shortly after Midsummer-day, and on my first ascending those wild Alps I felt as if I were in a new world. Here were no forests to be seen, but mountains upon mountains, larger and larger as I advanced, all covered with snow. No roads, no tracts, nor any sign of inhabitants, were visible. The declining sun never disappeared sufficiently to allow any cooling shade; and by climbing to the more elevated

parts of these lofty mountains, I could see it at midnight above the horizon. This spectacle I considered as not one of the least of nature's miracles, for what inhabitant of other countries would not wish to behold it? O Lord, how wonderful are Thy works!"

Bayard Taylor has thus strikingly described the same marvellous and beautiful spectacle: "We were in the narrow strait between the Island of Mageröe, the northern extremity of which forms the North Cape and the mainland. Here, where the scurvy carries off half the inhabitants—where pastors coming from Southern Norway die within a year—where no trees grow, no vegetables come to maturity, and gales from every quarter of the icy sea beat the last faint life out of nature, men will still persist in living, in apparent defiance of all natural laws. Yet they have at least an excuse for it in the marvellous provision which Providence has made for their food and fuel. The sea and fjords are alive with fish, which are not only a means of existence but of profit to them, while the wonderful Gulf-stream, which crosses 5000 miles of the Atlantic to die upon this Ultima Thule in a last struggle with the Polar Sea, casts up the spoils of tropical forests to feed their fires. Think of Arctic fishers burning upon their hearths the palms of Hayti, the mahogany of Honduras, and

the precious woods of the Amazon and the Orinoco! . . .

"On issuing from the strait we turned southward into the great Porsanger Fjord, which stretches nearly a hundred miles into the heart of Lapland, dividing Western from Eastern Finmark. Its shores are high monotonous hills, half covered with snow, and barren of vegetation, except patches of grass and moss. If once wooded, like the hills of the Alten Fjord, the trees have long since disappeared, and now nothing can be more bleak and desolate. Running along the eastern shore, we exchanged the dreadful monotony through which we had been sailing for more rugged and picturesque scenery. Before us rose a wall of dark cliff, from five to six hundred feet in height, gaping here and there with sharp clefts or gashes, as if it had cracked in cooling, after the primeval fires. As we approached the end of the promontory which divides the Porsanger from the Laxe Fjord, the rocks became more abrupt and violently shattered. Huge masses, fallen from the summit, lined the base of the precipice, which was hollowed into cavernous arches, the home of myriads of seagulls. The rock of Svœrholt, off the point, resembled a massive fortress in ruins. Its walls of smooth masonry rested on three enormous vaults, the piers of which were but-

tressed with slanting piles of rocky fragments. The ramparts, crenelated in some places, had mouldered away in others; and one fancied he saw, in the rents and scars of the giant pile, the marks of the shot and shell which had wrought its ruin. Thousands of white gulls, gone to their mighty roost, rested on every ledge and cornice of the rock; but preparations were already made to disturb their slumbers. The steamer's cannon was directed towards the largest vault, and discharged. The fortress shook with the crashing reverberation; then rose a wild, piercing, myriad-tongued cry, which still rings in my ears. With the cry came a rushing sound, as of a tempest among the woods; a white cloud burst out of the hollow archway, like the smoke of an answering shot, and, in the space of a second, the air was filled with birds thicker than autumn leaves, and rang with one universal clanging shriek. The whirring, rustling, and screaming, as the birds circled overhead, or dropped like thick scurries of snowflakes on the water, was truly awful. There could not have been less than 50,000 in the air at one time, while as many more clung to the face of the rock, or screamed from the depth of the vaults. It was now eleven o'clock, and Svœrholt glowed in fiery bronze lustre as we rounded it—the eddies of returning birds gleaming golden in the nocturnal

sun, like drift of beech leaves in the October air. Far to the north, the sun lay in a bed of saffron light over the clear horizon of the Arctic Ocean. A few bars of dazzling orange cloud floated above him, and still higher in the sky, where the saffron melted through delicate rose colour into blue, hung light wreaths of vapour, touched with pearly opaline flushes of pink and golden grey. The sea was a web of pale slate colour, shot through and through with threads of orange and saffron, from the dance of a myriad shifting and twinkling ripples. The air was filled and permeated with the soft mysterious glow, and even the very azure of the southern sky seemed to shine through a net of golden gauze. The headlands of this deeply indented coast—the capes of the Laxe and Porsanger Fjords, and of Mageröe—lay around us, in different degrees of distances, but all with foreheads touched with supernatural glory. Far to the north-east was Nordkyn, the most northern point of the mainland of Europe, gleaming rosily and faint in the full beams of the sun; and just as our watches denoted midnight, the North Cape appeared to the westward—a long line of purple bluff, presenting a vertical front of 900 feet in height to the Polar Sea. Midway between these two magnificent headlands stood the *midnight sun*, shining on us with subdued fires, and with the gorgeous colour-

ing of an hour for which we have no name, since it is neither sunset nor sunrise, but the blended loveliness of both, and shining at the same moment in the heat and splendour of noonday on the Pacific Isles.

This was the midnight sun as I had dreamed it—as I had hoped to see it. Within fifteen minutes after midnight there was a perceptible increase of altitude, and in less than half an hour the whole sky had changed—the yellow brightening into orange, and the saffron melting into the pale vermilion of dawn. Yet it was neither the colours nor the same character of light as we had had half an hour *before* midnight. The difference was so slight as scarcely to be described; but it was the difference between evening and morning. The faintest transfusion of one prevailing tint into another had changed the whole expression of heaven and earth, and so imperceptibly and miraculously that a new day was already present to our consciousness. Our view of the wild cliffs around, less than two hours before, belonged to yesterday, though we had stood on deck, in full sunshine, during all the intervening time. Let those explain the phenomenon who can; but I found my physical senses utterly at war with those mental perceptions wherewith they should harmonise. The eye saw but one unending day; the

mind notched the twenty-four hours on its calendar as before. Well might Linnæus exclaim, with pious rapture, as he gazed upon this—"not the least of Nature's miracles"—"O Lord, how wonderful are Thy works!" Surely it is no wonder that this "land of mysteries," with all its severity and gloom, its pictures of darkness and death, should exert, as we are told it does, a strange secret power of attraction, evoked by "the very mystic scene itself, which the midnight sun illumines, and around which the mountain ridges keep watch, while in winter the northern lights flame over the snow-clad earth." It may well remind the poor peasant that "God's Spirit rests upon the northern land" no less than on the southern, and symbolise to Christian faith and hope that blessed "land of pure delight" where "the sun shall no more go down," for the Lord shall be unto them "an everlasting light."

Adanson's Experience among the Negroes.

THIS naturalist was born at Aix, in Provence, on the 7th April 1727. His father, of Scotch extraction, was attached to the service of M. de Vintimille, then Archbishop of Aix, but on the removal of that ecclesiastic to Paris followed him thither, and at three years of age the little Michel became an inhabitant of the French capital. His education was very carefully attended to, and his natural ability well rewarded the labours of his instructors. He was very small of stature, and passed for much younger than he actually was; and when he was seen carrying away the prizes of the University, people laughed at the boy, hidden behind a huge volume of Pliny and Aristotle. (Such was the description of books then constantly given as rewards.) It chanced on one of these occasions that Needham, a naturalist famous for his microscopic discoveries, delighted at the talent of this juvenile prodigy,

presented him with a microscope, and said, "As you have been hitherto such an adept in studying the works of men, it is time you should now study those of nature." Probably these early instructions and successes influenced his subsequent career. He says, at the commencement of his Travels :—"Having in my very early days felt a particular liking to the study of philosophy and natural history, I found my inclinations averse from the profession for which my parents designed me, which was that of the Church ; and therefore I resigned a benefice, with which I had been already provided, that I might be entirely at liberty to pursue the study of natural philosophy. The branch I first took up with was that of botany, which I considered as one of the most engaging studies, not only from its considerable use in life, but from its agreeable variety. The opportunity I had of attending the lectures of MM. de Jussieu at the King's garden led me thither very often ; and the strong passion I felt for that science, together with my constant application, soon made me known to those masters, especially M. Bernard de Jussieu, who took notice of me, and by degrees led me on to the study of every branch of natural history. After having gone through a course of instruction for upwards of six years, under the direction of the most celebrated academicians, I

made known my intention of going abroad for further improvement. I selected the equinoctial parts of Africa, which had not been visited by any naturalist, and consequently offered a vast field from which to reap a plentiful harvest of observations. Well aware it was no small undertaking I had in view, I was not deterred by any difficulties, but declared my intention to my father, who introduced me in the year 1748 to M. David, director of the East India Company, to whom he was well known. He procured me a place in the factory of Senegal, and promised to promote my speedy departure."

Adanson has not mentioned the fact that it was at his own expense solely, and by the sacrifice of the greater part of his patrimony, that he was enabled to embark on his arduous and self-denying enterprise. He was just twenty-one years of age when he left his native shores, and during a period of six years expatriated himself to encounter a world of hardships and perils, solely for the desire he felt to prosecute the studies of his choice. "*Tantus Amor.*" On his return to France he published the history of his voyage, which gives a full and detailed account of his adventures and researches during five years' sojourn in those torrid and insalubrious regions. He was chiefly employed in indefatigable enquiries and researches,

collecting together immense treasures of natural objects—arranging, preserving, describing, and classifying them. Consulting rather his zeal in the cause than his safety or strength, he subjected himself to the severest trials, now walking over the burning sands of the African deserts, exposed to the scorching heat, or traversing rivers and torrents upon the back of a negro, who was occasionally up to his chin in water, or in defending himself against tigers, wild boars, crocodiles, serpents, and other savage animals, besides the many noxious insects with which those deserts abound. "I had," he says, "an amazing good state of health, and this bore me up in the midst of so many perils and toils, under which a great many would have sunk. Neither the dangers I was exposed to from wild beasts, nor the toils of coursing in the woods, which are rendered inaccessible by thorns, nor the sultry heats of the east wind that, obliged me every instant to have recourse to the river waters in order to quench my violent thirst—none of all these inconveniences deterred me—nothing was capable of cooling my courage."

Some idea of the trials attendant upon his exploratory rambles may be formed when we learn that his shoes grew tough like horn, scorched by the burning sands; then cracked, and at length fell away to powder. The very reflection of the heat

of the sun peeled the skin off his face, and occasioned a smarting which lasted for days together. To these inconveniences were added those of the quicksands, which were excessively fatiguing, as the traveller sank up to the ankles, and with difficulty waded along. "Then, for the first time," exclaimed Adanson, "I perceived the use of that thick skin with which nature has provided the soles of the negroes' feet, whereby they are secured against hard substances, and have no need of shoes. Yet I accustomed myself by degrees to this sort of fatigue, for there is nothing but what one may compass with a good will,—and this was not wanting."

Here is his picture of crossing one of the *marigots* or rivulets of the country, which are sometimes very dangerous: "When I had advanced a few steps towards the bed of the stream I entered, though I had my clothes on, into the water up to my waist; but I did not care to go farther, as I might have met with some hole, which would have embarrassed me greatly. I therefore sent my negro to sound the bottom; and in the meantime I got upon a tree, in order to avoid the serpents and the water, which began to fatigue me. After sounding for some time, he was of opinion he could carry me over a particular spot, where the water came up only to his nostrils when he stood on tip-

toe. The fellow was tall, being six feet some inches. I mounted upon his shoulders with my gun in my hand, a few birds, and a bundle of plants. He was soon in the water up to his neck; and I was not without some apprehension when I saw myself descend gradually up to my waist; however, I resigned myself to his skilful guidance, and I let him do as he pleased. He waded through the middle of the *marigot* with amazing resolution, without being the least daunted, though he was obliged to swallow three large gulps of water, which for some time took away his breath. As soon as I escaped this danger, I espied a plant of a very extraordinary beauty floating on the water, with soft silver leaves. That moment I forgot every other object, and though my Benbara was still up to his chin in water, I ventured to gather the charming plant. Thus I escaped luckily out of the *marigot* of Oua Soul, which at that time was very nearly 120 fathoms broad—that is, about twice the breadth of the Seine at Port-Royal—and I overtook the vessel before noon."

A pleasing night picture follows: "The negroes of this neighbourhood are obliged to lie on very high beds in order to escape from the mosquitoes, of which there are great swarms, especially in this month. These beds are from five to six feet square, and consist of a double texture of sticks

laid close together and supported by posts, which are raised eight or nine feet from the ground. They mount this kind of platform by step-ladders. At sunset the dreaded insects issue forth in swarms, and then the negroes betake themselves to these platforms, where they sup, and smoke and chat for a great part of the night, after which they sleep till day in the open air. I had never used the precaution of taking a tent with me, and I lay with them, and in their manner—that is, almost naked, the great heat not permitting me to wear any sort of garment. The mosquitoes were not indeed so troublesome as under cover, but still they sucked a great deal of blood, and every morning I had my face disfigured with pimples. This, however, did not hinder me from passing my nights very agreeably. Besides the amusement I received from the fables, dialogues, and witty stories, with which the negroes entertained each other according to their custom, I was ravished with beholding a sky ever blue and serene, and bespangled with stars that shone forth with the brightest lustre. Raised on this platform, as on a small observatory, open on all sides, I could easily accompany those luminaries with my eye in their revolution from east to west. Oftentimes, I did not lose sight of the upper edge of the disk of the sun and of the larger stars till they plunged under the horizon of the ocean.

"The negroes also pointed out to me a considerable number of the stars that form the chief constellations, besides most of the planets, wherewith they were well acquainted. Nay, they went so far as to distinguish the oscillations of the stars, which began at that time to be visible to the eye. It is amazing that such a rude and illiterate people should reason so pertinently in regard to those heavenly bodies, for there is no manner of doubt that with proper instruments and a good will they would become excellent astronomers, by reason that they live in a climate that enjoys a clear sky almost the year round."

More annoying even than the stings of the mosquitoes were a species of white ant, called *vag-vague*, abounding in the Island of Goree, where our naturalist lodged some months in a straw hut. "I should have thought myself pretty well off," says he, "had these insects attacked only the reeds of my habitation, but they pierced through a trunk, which stood on trestles a foot above the ground, and gnawed most of my books. Even my bed was not spared; and though I took care every evening to break down the galleries they constructed, yet they were frequently erected again during the night up to my bolster, and the *vag-vagues* got into the bed, where, after cutting the linen and mattress, they came to my flesh, and bit me most cruelly.

Their size is hardly larger than that of our large European ants, yet they are of such a constitution that neither fresh nor salt water, nor vinegar, nor any other strong liquors, with which I often covered the floor of my chamber, were able to destroy them, so that every method I took to extirpate the breed proved ineffectual." No evil is without a counterbalancing advantage. Thus, our enthusiast found a consolation for all his "swellings and acute pains" occasioned by the hostilities of the *vag-vagues*, since, thanks to the wakefulness they induced, he had opportunities for making a repetition of experiments which he frankly acknowledges "might otherwise have been performed but very seldom."

"My room," he says, "was full of pails of sea-water, in which I constantly kept live fish, which in the night-time emitted a light not unlike that of phosphorus. The mugs full of shells, and even the fish that lay dead on the table, gave the same light. All these illuminations put together, and reflected upon different parts of the room, made it appear as if it were on fire; and I must own that I was of that opinion the first time I saw the strange phenomenon. The *vag-vagues*, by awakening me suddenly out of my sleep, renewed my fright much oftener than I could have wished in the beginning; but my apprehension gradually

ceased by seeing the thing often repeated, till I at length received a pleasure from the extraordinary sight. What was most engaging, each fish showed itself plainly to the eye by the light emitted from its body; and the same effect was produced by the shells and other sea bodies which I had with me; even the pails themselves looked like a burning surface. This was not all; every day the sight was new, because I had new fishes and new shells to observe; now it was a pilchard, now a molebat; at one time a purple fish, at another a periwinkle, a polypus, a crab, or a star-fish, that showed its luminous rays in the dark; in short, I perfectly distinguished the shape of all these different fishes by rays of light which darted from every part of their bodies; and as I could place them in a thousand different positions, I had in my power to give an infinite variety to this beautiful illumination.

"When the *vag-vagues* actually compelled me to quit this glittering mansion, and to look for relief abroad, the angry ocean presented me with the same phenomenon on a large scale. The foaming billow seemed to metamorphose themselves into mountains of fire, and exhibited to my view a most amazing spectacle, more capable of exciting admiration than fear, even in the minds of persons exposed to their fury."

Many more equally vivacious passages might be

given, full of natural feeling, and pleasing from the *bonhommie* and simple earnestness of the writer. M. Adanson's subsequent career was very characteristic of the man. He published, besides his voyages, the "Natural History of Senegal," and a valuable work on "The Families of Plants," and would in all probability have done much more by his publications in aid of natural science had he not adopted an impracticable idea—that of producing a general Encyclopædia, a gigantic compendium of Universal Science. His arrangements and propositions were regarded as chimerical by his associate savants, and proved futile. He continued, however, incessantly engaged in amassing materials for its execution, and he drained himself of all his resources in its prosecution. Firmly convinced that he should eventually accomplish this *chef d'œuvre*, he needed no other occupation or source of enjoyment. Had he listened to the voice of ambition or worldly interest, he might have speedily heaped to himself riches and honours. The English Government having, in 1760, taken possession of Senegal, sought eagerly to obtain his advice and instructions relative to the best methods of cultivating the natural productions of that region; and so highly were his scientific merits appreciated, that the Emperor of Austria, the Empress Catherine of Russia, and the King of Spain,

successively endeavoured to induce him to settle within their realms. To all these flattering overtures he remained indifferent. His love for "La Belle France" was carried, according to his French biographer, "jusqu' à l'exaltation," and he would serve no other country but his own.

The Revolution at length arrived, and Adanson saw himself stripped of all he possessed. The loss which he took most to heart was that of his garden, in which, for many years, he had delighted to carry on his experiments in the cultivation of plants and vegetables. He had especially devoted his care to the production of a great number of varieties in the mulberry, and he mourned as he beheld these treasures cut down by the hands of the mob. In spite of the destitution to which he was reduced, he retained his composure and continued his labours; on a reduced scale indeed, for he had only a small, inconvenient, and unwholesome abode, and a little plot of ground for a garden, which was of such narrow dimensions that the amiable enthusiast was obliged to satisfy himself with the *representatives*, so to speak, of each of his *families*.

He would probably have remained long forgotten, had not the Institute, at the time of its formation, invited him to join its ranks. He replied that it was not in his power to comply with

the invitation, as *he had not shoes.* The Minister of the Interior granted him a pension.

Adanson died in 1806, cherishing to the last the hope of seeing his great work completed. Surely from such an original must Walter Scott's gardener Abbot have been drawn. My readers will recall the scene in the cottage of the old man on the night of Queen Mary's escape from Loch-leven, and will remember his pettish reply to her proffers of remuneration:—"May it please your Grace, if your Grace's servants have occupied my house so that I could not call it my own; if they have trodden down my flowers in the zeal of their midnight comings and goings, and destroyed the hope of the fruit-season by bringing their war-horses into my garden, I do but crave of your Grace in requital, that you will choose your residence as far from me as possible. I am an old man, who would willingly creep to my grave as easily as I can, in peace, good will, and quiet labour."

Labours of Pierre Lyonnet, the Entomologist.

ONLY think of an entomologist celebrated for having devoted several years to the investigation of a single insect! Surely he deserves to be ranked among the enthusiasts of science. Pierre Lyonnet, alike distinguished as a naturalist, an anatomist, and an engraver, was born on the 21st July 1707, at Maestricht. His family came originally from Lorraine, having been driven from their native country by religious persecution. His father, who was pastor of the French Church at Keusden, destined his son for the same sacred calling, and educated him with that view. Having an extraordinary aptitude for acquiring languages, he made himself master, at an early age, of Latin, Greek, Hebrew, French, Italian, Spanish, and English, with all which he was almost equally conversant. At the same time he studied the exact sciences and attained considerable proficiency in drawing and sculpture.

When he came of age to judge for himself, he preferred the profession of the law to that of divinity; and having graduated at Utrecht, and practised as a barrister for some time at the Hague, he obtained the appointment of perpetual secretary and sworn translator to the States-General of the United Provinces. The abundant leisure which the duties of this office left upon his hands he devoted to the study of natural history, and especially to that of insects. He formed a collection of those which are found in the neighbourhood of the Hague, of which he made descriptions and coloured drawings. With the feelings of a true Christian, Lyonnet delighted in these studies to behold the wonders of creative skill and benevolence, and his first publication was a translation of Lesser's "Theology of Insects," a work in which the author's aim is to point out the proofs of the Divine goodness and wisdom as seen in that class of animals. He added numerous and valuable notices to the original, and some drawings by himself. Shortly before this time, his friend Abraham Trembley, the Genevese, had come to the Hague, where he had made his famous discovery of the fresh-water polypus, and its method of propagation by budding, or self-division. He imparted these observations to Lyonnet, who drew for him the figures necessary to illustrate them, and the cele-

brated artist Vandeleer undertook to engrave them; but being preoccupied with numerous other engagements, he delayed from time to time the fulfilment of his promise. Impatient to see so important a work completed, Lyonnet determined to try his skill, and having obtained from the artist an hour's lesson in engraving, he then produced, as his first attempt, the eight last plates in that famous treatise, which are as admirable for the delicacy as for the correctness of their execution. Encouraged by his success, he now resolved to apply the talent he had thus discovered himself to possess for the illustration of his own scientific researches. He hesitated for some time before he finally decided to undertake the investigation of a subject which he believed would exhaust any other patience than his own. This was the anatomy of one single caterpillar,—that which infects the willow-tree, and which is so common in Holland (*Phalæna cossus* of Linnæus).

In his hands this became a unique work; and no sooner did his book, describing and figuring it, make its appearance to the world, than it was immediately ranked among the most surprising *chefs-d'œuvres* of human industry. It was a quarto volume of more than 600 pages, adorned with 18 plates. The author here exhibited all the parts of this minute animal with the utmost detail and exact-

ness. The number of the muscles alone, all described and figured, is 4041; that of branchial nerves and the trachial branches is infinitely greater. The intestines are also shown with their minutest details, and all given in engravings so delicate, so admirably adapted to show the tissue of the substances they represent, that the eye seizes the whole with as much facility as though it beheld the object itself through the medium of the microscope. This book was pronounced by Bonnet, a celebrated philosophic naturalist, to be one of the most admirable demonstrations of the existence of a First Cause; nor will it lose its value so long as entomology shall be cultivated as a science, or the comparative anatomist trace with delight the footsteps of Divine wisdom in the gradually varying structures of animals.

So marvellous was the delicacy of some of his experiments, that they at first appeared incredible, and he was obliged, to satisfy the doubts of the public, to exhibit them to skilful observers and judges. It formed part of his design to illustrate in a similar manner the anatomy of the chrysalis and perfect moth; but his labours were interrupted by an accident which impaired his eyesight when about sixty years of age.

In relation to the experiments he made while engaged in preparing his "Traité Anatomique de

la chenille du Saule," Lyonnet exhibited such tender sensibility as does him honour. In truth, while we admire his dexterity and marvel at his patience, we love him for his kindheartedness. He takes pains to assure his readers that it was necessary to sacrifice but a very small number of these insects to effect his observations; and he adds, that to prevent their suffering he put them into spirits of wine before opening them. One cannot but call to remembrance the exclamation of the poet,—

> "I would not number in my list of friends,
> Though graced with polished manners and fine sense,
> Yet wanting sensibility, the man
> That needlessly sets foot upon a worm."

Little more is known of Lyonnet except that he died in January 1789, at the advanced age of eighty-two. Apparently he had never been married.

Incidents in the Lives of Latreille and D'Esjonbil.

EVERY lover of entomology doffs his cap at the name of Latreille, to whom, with one voice, the most competent judges have done homage as "facilè princeps entomologorum." This "new and brilliant genius," whose indefatigable labours and singular talents threw more light over the science he loved than those of all his predecessors, was born at Brives, in the department of Corréze, on the 29th November 1762. His parents were of an honourable family, but he was early deprived by death of their care, and apparently they left but very slender means of subsistence for the education of their orphan child. Indeed, he himself says that he seemed born to misfortune and obscurity. How often in the history of men of genius do we meet with similar examples. But Providence happily raised up for him devoted friends and protectors; and the attrac-

tiveness of his manners when a child obtained for him the regard and good offices of some generous citizens of his native place. M. Laroche, a skilful medical practitioner, and his family, took an affectionate care of the young orphan; and after their example, a merchant of Brives, named Malepeyre, showed the warmest interest in him, lent him books on natural history, and never ceased to encourage and foster the rising taste which his young friend already showed for the science he was one day to illustrate. Perhaps, but for this generous and Christian benevolence, France might not have had the honour of possessing the first of her entomologists.

Another of his early patrons was the Baron d'Espignac, governor at the Invalides, at whose request Latreille went to Paris when he was about sixteen years of age. Soon afterwards he had the misfortune to lose this friend, who had shown a fatherly affection for him, by death; but the loss was to some extent supplied by a sister of the deceased, the Baroness de Puymarets, and by others of the same family. Through their influence Latreille was placed in the college of Cardinal Lemoine, where he continued for a considerable time prosecuting various branches of education. While here he had the happiness to acquire the friendship of the celebrated mineralogist Haüy. In his twenty-

fourth year he retired to the country, and during his stay there devoted himself entirely, and with the utmost eagerness, to the study of insects.

The friends of Latreille were desirous that he should enter the Church; his constitution was far from robust, and it was hoped that the advantages of a calm and peaceable profession would thus be secured for him. As it proved, he was by this very means rendered obnoxious to persecution and suffering. As a member of the ecclesiastical body, he was the object of suspicion to the revolutionary party, and shared the fate of thousands of his brethren. Among the multitudes condemned to *deportation*, as it was called, he was included; he was immediately thrown into prison, and afterwards conveyed to one of the general depôts of the city of Bordeaux, there to await the execution of his sentence.

An incident, trivial in itself, was the means of saving him from the terrible fate of his fellow victims. The surgeon who visited the jail in which Latreille was confined one day observed him carefully examining a small beetle which had found its way into his place of confinement. Upon inquiry, he was informed by the prisoner that the insect was a very rare one; and he then expressed a wish to have it for the purpose of presenting it to two young naturalists of his acquaintance living at

Bordeaux. The wish was readily complied with, and the insect was conveyed to MM. Bory de St. Vincent and Dargelas. Latreille's eminence as an entomologist was already known to these gentlemen, and, being thus made acquainted with his perilous situation, they immediately exerted themselves to obtain, if possible, his liberation, in which they ultimately succeeded. One trembles to think that a month later he must in all probability have shared the fate of his fellow-prisoners, who were shipped as convicts for Cayenne, and the vessel which conveyed them foundered in the Bay of Biscay, when *every soul on board perished.* The deliverance was truly marvellous, if we refer to its cause—the accidental discovery of an insect. It has been said by one of our great divines,* that "a fly with God's message could choke a king;" and a little insignificant beetle thus saved Latreille. How obscure the means God often employs, and how apparently inadequate the instruments He uses, to effect His wondrous purposes! It is as though He said, in language not to be mistaken, "I kill, and I make alive."

After Latreille's release he relinquished his views of entering the Church, and devoted himself entirely to his favourite study. In 1797 he was again proscribed as an émigré; but the favour of his fel-

* Jeremy Taylor.

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low-citizens, and the influence of his friends, were sufficient to protect him. At a later period he went to reside permanently at Paris, where he was employed in the congenial task of arranging the insects in the Museum of Natural History. His zeal and talent soon rendered him the successful competitor and superior of those whom he called his masters. His slender emoluments sufficed to supply his modest wants; and he procured what was necessary to extend the limits of the science to which his labours were devoted by writing for the booksellers various works on the different branches of natural history, and also on general science. All his writings displayed intelligence and varied information; but those treating of entomology always evinced his rapid progress in this science, until at last his great work, the *Genera Crustaceorum and Insectorum* placed him in the first rank of the entomologists of Europe. In this he first mentioned his little insect deliverer. Under the genus Necrobia he gives, as an illustration, the species called *Necrobia ruficollis;* and at the end of its descriptive mark adds, "an insect very dear to me, for, in those disastrous times when France groaned tremulously under the weight of endless calamities, by the kind intervention of Bory de St Vincent and D'Argelas, but principally the latter, this little animal was the

miraculous cause of my liberty and safety." Latreille died on the 6th February 1832, and was buried in Père la Chaise, where a handsome monument is erected to his memory. It is in the form of a truncated obelisk, surmounted by a bronze bust of Latreille; and on one side is engraved a highly magnified figure of the *Necrobia ruficollis*.

An escape scarcely less wonderful than that of Latreille, and effected by similar means, is told of M. Quatremer d'Isjouvil, a Frenchman by birth, who was adjutant-general in Holland, and took an active part on the side of the Dutch patriots when they revolted against the Stadtholder. On the arrival of the Prussian army under the Duke of Brunswick, he was immediately taken, tried, and, having been condemned to twenty-five years' imprisonment, was incarcerated in a dungeon at Utrecht, where he remained eight years.

Spiders, which are the constant, and frequently the sole occupants of such places, were almost the only living creatures which d'Isjouvil saw in his prison. Partly to beguile the tedious monotony of his life, and partly from a taste which he had imbibed for natural history, he began to seek employment, and eventually found amusement in watching the habits and operations of his tiny fellow-prisoners. He soon remarked that certain actions of the spiders were intimately connected with approaching

changes in the weather. Further observations confirmed him in believing these creatures to be in the highest degree sensitive of atmospheric influence, and that their retirement and reappearance, their weaving, and general habits, were so intimately connected with variations in the weather, that he considered they were of all things best fitted to give accurate intimation when severe seasons, or the reverse, might be expected. In short, he pursued these inquiries with so much industry and intelligence, that, by remarking the habits of his spiders, he was at length enabled to prognosticate the approach of stormy weather from ten to fourteen days before it set in, which is proved by the following facts, which ultimately led to his release.

When the troops of the French Republic overran Holland in the winter of 1794, and kept rushing forward over the ice, a sudden and unexpected thaw, in the early part of the month of December, threatened the destruction of the whole army unless it were instantly withdrawn. The French generals were thinking seriously of accepting a sum offered by the Dutch and withdrawing their troops, when d'Isjouvil, who hoped that the success of the Republican army might lead to his release, used every exertion, and at length succeeded in getting a letter conveyed to the French general in January 1795, in which he pledged himself, from the peculiar

actions of his spiders, of whose movements he was now enabled to judge with perfect accuracy, that within fourteen days there would commence a most severe frost, which would afford the army sufficient time to complete and make sure of the conquest they had commenced, before it should be followed by a thaw. The commander of the forces believed his prognostication, and persevered. The cold weather which d'Isjouvil had foretold made its appearance in twelve days, and with such intensity, that the ice over the rivers and canals became capable of bearing the heaviest artillery. On the 28th January 1795 the French army entered Utrecht in triumph, and Quatremer d'Isjouvil, who had watched his spiders to such good purpose, was, as the reward of his intelligence and ingenuity, released from captivity.

Incidents in the Life of Sonnini.

IT is impossible to conceive of a life more widely different than that of the travelling naturalist compared with the one led by his brother of the Cabinet. The latter may pass his whole existence in busy and important research without crossing his own threshold, while the former is exploring savage countries and encountering various adventures, perils, and chances, for the sake of rifling the north, south, east, and west, of their treasures. For him there is no delight equal to that of overcoming obstacles, if he can but obtain what he seeks, and return laden with spoils which, in his estimation, surpass the choicest gems of India. It is evident that the two have distinct avocations, and that the laborious investigation and patient research requisite for minute examination and careful arrangement can but little accord with the genius of the intrepid wanderer.

Among the number of those who have displayed

indefatigable zeal and courage in the cause of zoological research is Sonnini (de Manoncourt), born at Lunéville in the year 1751. He was descended of an ancient family, his father being hereditary lord of the fief of Manoncourt in Vermois, and councillor of Stanislaus, King of Poland. He was educated at the University of Pont à Monsoon, a celebrated Jesuit establishment, and made such rapid progress in his studies that at the early age of fifteen years and a half he took the degree of doctor in philosophy. From his youth he manifested great love for the study of natural history, and attracted, in consequence, the attention of Buffon and Nollet, who fostered these early buddings of his genius. He had been designed by his father to occupy an official situation, and went to Strasburg to study law; but the bent of his mind led him soon to relinquish this pursuit. He longed to travel; and as the best means to attain this desire, he resolved to embrace the profession of arms. He soon obtained a commission in the Marine Engineer service, and was sent to Cayenne in 1772. He had found his congenial sphere. "Nature" (to use his own words) "had in a manner marked out his destination. With an ardent imagination, a love of the sciences, a passion for discoveries, the *sang-froid* of courage, and a constitution proof against anything, he appeared to be intended for the most

arduous enterprises and for the execution of no common projects." He traversed, with eager steps, the vast province of Guiana; dangers, privations, and obstacles, seeming but to increase his energy. He showed great enterprise and courage in exploring the country and dislodging from their strongholds the savages by whom the colony was molested; and succeeded, at great personal risk, in making a passage by water from Cayenne to the mountain La Gabrielle, the accomplishment of which had been much desired by the colonists, but abandoned by reason of the natural difficulties of the route. This perilous business was eagerly undertaken by Sonnini, who embarked in a frail canoe with a company of Indians, and for ten days persisted in navigating those savannahs through immense low marshy plains, the haunts of the cayman and myriads of noxious creatures. Difficult beyond conception was the enterprise, and he suffered the horrors of drought and famine in addition to the poisonous exhalations of those infectious regions, the attacks of the mosquitoes, and the murmurs of his savage companions, who despaired of success and were clamorous to return. Thus, when only in his twenty-third year, the youthful Sonnini had honourably enrolled his name in the annals of that colony. On his return to France he was for this service promoted to the rank of lieutenant. In

1775, after a visit to the western coast of Africa, he returned to Cayenne; and during the two years he remained there, occupied himself almost wholly with researches into the natural history of that region. The journal he kept was not published, but is frequently referred to in the works of Buffon. At length Sonnini's health became impaired. He suffered from an obstinate fever, which preyed upon his spirits and strength, and compelled him to repair to his native country. He found a congenial retreat at Montbard, where his great friend Buffon gladly welcomed him, and for a short time Sonnini was content to remain tranquil. He tells us, "I spent nearly six months there; and that time, which fled too rapidly, is certainly the period of my life that has left behind it the most grateful recollection. It is to my stay in that abode of the sciences and of taste that I am indebted for the little I am worth. It was winter, and the severity of the season kept away troublesome visitors. Day succeeded day in delightful succession, while I was aiding the great man in his labours and enjoying his society—a society highly agreeable, and which was never disturbed by the smallest inequality of temper, and which I have never met with anywhere else. Buffon was not one of those men of letters whom Erasmus whimsically compared to the tapestry of Flanders, with great figures, which, to pro-

duce their effect, must be seen at a distance. His conversation was equally agreeable and interesting, and he blended with it an unaffected gaiety and a good-humoured manner which put every one at his ease. To these social qualities he joined a finely formed person. Like Plato, he was of the tallest stature and most robust make. His broad shoulders announced his strength; his forehead was high and majestic; and he distinguished himself by the grace of his demeanour and the dignity of his gestures."

At the end of these happy six months, Sonnini learned that the Government was sending an expedition to Africa under Baron de Tott, and applied for permission to accompany it, which was accorded.

His French biographer has observed, with justice, that Sonnini has "painted himself in his writings." The reader shall have a glimpse of him during his voyage to Alexandria, in which he relates a pleasing incident with the poetry of feeling:—"The day after our departure from Malta two small birds, one a little grey fauvette, the other a little bergeronnette, came and settled upon the rigging; but being unable to support the fatigue of so long a flight, they suffered themselves to be taken by hand. As their diminutive bodies would have afforded but a scanty dish, I had no

great difficulty in obtaining possession of them. I carried them to the great cabin, and there, after having lavished upon them caresses to which they were rendered insensible by their state of uneasiness, I restored them to liberty. Whether they foresaw the storm which we encountered the following day, or whether, as no land was in sight, they were afraid to trust themselves to the open sea, I know not; but, after a few moments of uncertain flight, they returned by the same window whence I had let them fly. From that time they never quitted the great cabin; and if, when frightened by any noise, they went out of one of the stern windows, or by a port, they were sure to come back by another. Although of different species, they lived in the greatest harmony. They played upon those terrible machines which deal death and destruction at a distance, and it was upon a cannon even that was placed their little provision of fresh water and crumbs of bread. It served them also as a resting-place. Their confidence was unbounded; they fluttered over a table at which twenty persons, somewhat noisy, were daily seated, and with their chirping and quick motion enlivened our monotonous abode. On our approach to the coast of the island of Candia, our pretty and interesting navigators hastened to fly away, and took leave of us by uttering a few shrill

notes, the sweet accents of their joy, and, perhaps, of their gratitude. Charming birds! you were quitting a dull and dreary place, to which you gave an air of life, and were going to animate lovely groves, already embellished by all the favours of nature. May you long continue there, a testimony of your fortunate navigation, and a proof that, in the midst of the horrors of tempests and of raging seas, and among men who seem to be rendered unsusceptible of the tender affections of the heart, by the necessity of braving continued danger, you met with feeling and compassionate beings."

Sonnini was desirous of extending his researches throughout the length and breadth of Africa, from the Gulf of Sidra to the Cape of Good Hope. His ardent spirit prompted him to propose the gigantic project he had formed; but it was not sanctioned by those in authority, and he was limited to a narrower field. His attention was to be peculiarly devoted to the natural productions of the country, and to extend to the manners and habits of the people. The narrative of his travels in Egypt gives a minute and animated picture of his personal adventures, and is full of valuable zoological observations.

One of the former was of a very reprehensible character, and had nearly cost him dear. Having been detained some time at Cairo, he amused him-

self in the company of a young fellow-countryman by learning to make what might be called finger-work courtship. He soon mastered the art of signals, which in that country is an expressive language; and having, between the narrow openings of a wooden lattice, some sixty yards distant from his room, caught sight of a female figure, commenced making trial of his skill. His signals were returned, and he continued his foolish pastime. But one evening, as his telegraph was in full action, Sonnini was alarmed by the sudden whizzing of a musket ball close to his head! a significant warning that such proceedings would not be unpunished in Cairo.

Happily, the expedition was soon in readiness to proceed, and preparations were made for departure. Sonnini exchanged his European dress for the costume of a Turk. "My hair," he exclaims, "was sacrificed—[it is the only time our adventurous traveller uses the word]—an enormous turban, of the kind worn by the Druses, enveloped with several turns my shorn head, and protected it from the burning heat of the sun; long and ample garments, which were partly kept together by a silk sash, covered my body without pressing it, leaving it at perfect liberty. There is no confinement in the oriental habit, and after an European has worn it some time, he finds the inconvenience of our

tight and scanty clothes, and has some difficulty in reconciling himself to them again." Poor Sonnini had sufficient reason to lament the loss of his hair on one occasion. During his passage across a sandy desert, he fell into the hands of a band of Bedouin Arabs. They numbered nearly a hundred, while his own little party consisted of six men only. It was hopeless to resist, and the unhappy travellers threw down their weapons. "Immediately," says Sonnini, "they came upon us, and stripped us in an instant. They left me only my under waistcoat and my breeches; my companions were stripped to the shirt. My turban having also been taken, my head, bare and shaved, was exposed to the burning heat of the sun, and pained me excessively; and although I covered it as well as I could with both of my hands, this precaution afforded me no relief. The booty was spread upon the sand, and the whole party, not without noisy quarrels, began to divide the spoil.

"The scene would have furnished a striking subject for a picture. On one side might have been represented the gang of robbers covered with dust, their countenances parched as the sands, quarrelling about the booty; in the midst of them my old servant, endeavouring, with great coolness, to seize upon some articles of which we had been plundered, and occasionally making snatches at

them; in the foreground, the soldier, motionless and confounded; the two Egyptians, stupidly gazing at each other; myself in the background, biting my nails, with looks of anger and indignation; and lastly, the draughtsman, weeping aloud, and answering me with sobs, when I asked him if he had met with any ill usage, 'No, sir; but what can we now get to eat?'" The denouement of this affair was exceedingly curious. In compliance with the spirited remonstrances of his conductor, Hossein, Sonnini was released and his property restored to him—the Bedouin chief demanding a certificate to the effect that the stranger who had fallen into his hands had been honourably treated, and was satisfied with his conduct! By way of conclusion, they ate together a meal of bread and lentils; and after the repast, the Arab robbers approached the man they had so recently stripped and plundered, "with a degree of interest and cordiality, blaming the temerity which had induced him to attempt a journey through the wilderness, which was acknowledged to be the resort only of thieves and banditti."

As everybody knows, the Turks are great cat-fanciers; and in Egypt a cat is even allowed in a mosque. These animals are in all the houses of the inhabitants, and are indulged and caressed by the effeminate and indolent of the upper classes.

In fact, unless they were deified, as in the times of the ancients, it would be impossible for them, our zoologist thought, to be made more of. Sonnini himself had a passion for cats. He always kept a number of them, and in his works has spoken of them in the highest terms of commendation. The manners of the Egyptian cats confirmed him in his idea that these animals are greatly influenced by the treatment they receive. He compared the barbarous usage of the miserable creatures in his own country, and asked, who could wonder if they had a savage look and wild manners, while these Egyptian pets were so gentle and familiar. If the reader share with me M. Sonnini's partiality for mousers, he will read with great pleasure what follows:—"I was for a long time the possessor of a very fine Angora cat. Her long and thick hair covered her completely; her bushy tail formed a brush, resembling a beautiful plume of feathers, which she could at pleasure turn upon her back. No spot, no shade tarnished the dazzling whiteness of her coat. Her nose and the turn of her lips were of a pale rose colour. In her round head sparkled two large eyes—the one of a light yellow, and the other blue. The graceful movements and attitudes of this charming cat were even surpassed by her amiable disposition. Her aspect was mild, and her gentleness truly interesting. Though

ever so much handled, she never exerted her claws from their sheath. Sensible of caresses, she licked the hand that stroked her, or even that by which she was teased. When travelling, she would lie quietly upon my knees, without the necessity of being held; she made no noise, nor was she at all troublesome while near me, or any other person she was in the habit of seeing. When I was alone she sat at my side, would sometimes interrupt me with little affectionate caresses in the midst of my labours or meditations, and she would also follow me in my walks. In my absence she would seek me, and at first cry after me with uneasiness; and if I did not soon make my appearance, she would leave my apartment, and attach herself to the person in the house whom, after me, she most loved. She knew my voice, and seemed to receive me every time with increased satisfaction. Her step was straight, her gait free, and her look as mild as her disposition; in a word, under the brilliant and furry skin of a cat, she possessed the good temper of the most amiable dog.

"This animal was for many years my delight. How expressively was her attachment painted in her face! How often have her fond caresses diverted my mind from care, and consoled me in my misfortunes! How often has an animal of a species accused of treachery formed, at my house, a strik-

ing contrast to a crowd of real traitors, who, under the mask of friendship, beset the door of an honest man, only the better to deceive him; to those serpents I have fostered in my bosom, only to feel their sting! They are yet alive; but, alas! my beautiful and pleasant companion is no more. After several days of suffering, during which I never left her, her eyes, constantly fixed on me, closed, never again to open—my tears flowed—they now flow. Feeling minds will pardon this digression, caused by grief and gratitude."

The curiosity of the reader is probably excited to know who were the enemies so vehemently denounced by our impetuous naturalist? After remaining some time in Egypt, and travelling subsequently in Greece and Asia Minor, he returned to France in the autumn of 1786, after an absence of rather more than three years, and hastened to pay a visit to his father and the home of his boyhood. He met with a very different reception from what he had anticipated. An absence of several years had been taken advantage of by the prodigality and cupidity of his relatives, who endeavoured to deprive him of his patrimony. After a vexatious series of litigation, Sonnini recovered a portion of the estate at Manoncourt, where he built a manor-house, and employed himself in the improvement of agriculture, introducing several valuable exotic

vegetables into his country.* At an early period of the Revolution he was appointed one of the administrators of the Department de la Meurthe; but being deprived of this office by St Just, and reduced to poverty on account of his noble birth, he employed himself in arranging and publishing the materials collected in his travels. He also undertook to superintend a new edition of Buffon's "Histoire Naturelle," to which he contributed thirteen volumes, and one volume of Cetacea; and, conjointly with Latreille, four volumes of Reptiles. From these valuable literary labours he was taken by Fourcroy, then Director-General of Public Instruction, who placed him at the head of the College of Vienne, in the Department of the Isère. It had formerly enjoyed a high reputation, and Sonnini endeavoured, by enforcing order and discipline, to restore it to its former estate. But he was frustrated in all his efforts, and so thwarted and annoyed, that at the end of two years he relinquished the post which his real talents and the confidence of Government had procured him. He then returned to his literary labours, which he was compelled to prosecute for a livelihood.

* During the disastrous results of the tempest of July 13, 1788, by which a large part of the agricultural districts of France was laid waste, Sonnini published a valuable pamphlet, entitled, "The Vow of an Agriculturist." He also produced, from time to time, similar useful and practical essays.

In 1810 he went to Moldavia, and, while travelling in that country, caught a fever, under which he languished some months, and expired at Paris early in the year 1812.

A Sketch of the Life of John Swammerdam.

IT would be difficult to find a more devoted enthusiast in the pursuit of natural history than Swammerdam. To the celebrated Boerhaave we are indebted for an interesting life of this distinguished anatomist and physiologist, who was among the first scientific men who applied the microscope to the examination of the minuter parts of the animal structure, and whose consummate skill and indefatigable perseverance effected many important discoveries.

He was the son of John James Swammerdam and Barentje Corver, and was born at Amsterdam on the 12th February 1637. His father obtained his name from the place of his birth, a village on the Rhine, and it continued to be applied to his descendants ever after. He followed the trade of an apothecary, and was very fond of natural history, and we are told was well skilled in several branches

of it, during fifty years sparing neither pains nor expense in procuring materials for a collection which in course of time became very valuable—"his house being full of animals, insects especially, vegetables and fossils, though without the least confusion, everything being disposed in its proper place and order. Both citizens and strangers (continues Boerhaave) viewed this collection with great admiration; and the greatest princes that passed through Amsterdam visited it, as one of the things best worth their attention in that famous city."

The young Swammerdam was intended for the Church, but, having no disposition for that calling, induced his father to consent that he should be brought up to the medical profession, and he remained at home during his preparatory studies, where he was frequently employed in cleaning, arranging, and cataloguing the curiosities and treasures we have spoken of. In this manner he gradually acquired a deep-rooted love for the study of natural history; and very soon he began to make a collection of his own, procuring specimens of various kinds, "catching some, buying or bartering for others, and disposing them in certain classes, and comparing them with the accounts given by the best writers." This boyish propensity "grew with his growth," and though, in obedience to the calls of duty, he attended to his anatomical and

medical studies, he gave every hour he could appropriate to his favourite pursuit. "Day and night he employed himself in discovering, catching, and examining the flying insects proper to those two different times, not only in Holland, but in the provinces of Guildres and of Utrecht. He ransacked, with this view, the air, the land, and the water; fields, meadows, pastures, corn fields, downs, wastes, sand-hills; rivers, ponds, wells, lakes, seas, and their shores and banks; trees, plants, ruins, caves, uninhabited places, and even bog-houses, in search of eggs, worms, nymphs, and butterflies; in order to make himself acquainted with the nests of insects, their food, manner of living, disorders, changes or mutations, and their several ways or methods of propagation; and indeed, while yet a very young man, he had made more discoveries in regard to all these particulars, and obtained more certainty, than the known authors of all the preceding ages put together. This, however incredible it may appear to some, is notwithstanding matter of fact. Persons properly qualified to judge of his success have honoured it with the same testimony." It must be remembered that this remarkable statement is made by Boerhaave, than whom it would be difficult to find a more competent judge.

At the age of fourteen young Swammerdam went to Leyden, to enjoy the advantages of its celebrated

university. Here he highly distinguished himself by his skill in anatomy, and the anxiety he displayed in the acquisition of every kind of knowledge relating to the physical sciences. He afterwards visited Paris, with a view to prosecute his studies there, and formed some valuable friendships with men of kindred taste for science. Returning to Leyden, he took the degree of M.D. in 1667, and published his "Thesis on Respiration." At this time he began to practise his invention for injecting the arterial vessels with wax, variously coloured; a method from which anatomy has derived very important advantages. While thus most diligently occupied, he was attacked with a quartan ague, which reduced him very low, and compelled him to discontinue for a time all his engagements. On his recovery he entirely relinquished the study of the human anatomy, and devoted himself wholly to the dissection of insects, in which he was singularly dexterous. An opportunity now presented itself, affording him the option of an advantageous settlement. It is thus related by his biographer: "In the year 1668 the Grand Duke of Tuscany, being then in Holland with M. Thevénot in order to see the curiosities of the country, came to view those of Swammerdam, and surveyed them with the greatest delight. On this occasion our naturalist made some anatomical dissections of insects

in the presence of that prince, who was struck with admiration at his great skill in managing them, especially at his proving that the future butterfly lay, with all its parts neatly folded up, in a caterpillar, by actually removing the integuments that covered the former, and extricating and distinctly exhibiting all its parts, however minute, with incredible ingenuity, and by means of instruments of an inconceivable fineness. On this occasion the duke offered the younger Swammerdam 12,000 florins for his share of the collection, on condition of his removing them himself into Tuscany, and going to live at the court of Florence; but Swammerdam (adds Boerhaave), who hated a court life above all things, rejected his Highness's proposal. Besides, he could not put up with the least restraint in religious matters, either in point of speech or practice."

Swammerdam must indeed have acted from purely disinterested motives, for he was not in a situation to prosecute his beloved studies without assistance. "Seeing him entirely bent on the work of collecting insects from every part of the world, which he spent his whole time in arranging, our author's father," says Boerhaave, "began to take offence. He had hitherto kept his son at home and supplied all his expenses; for though he was now thirty years old, and consequently had spent the best

years of life, he had not engaged in any business that could serve to render him easy and independent." M. Swammerdam, senior, now seriously remonstrated with him, and insisted on his applying with diligence to the duties of his profession as a physician. It was, however, but too evident that his health had become exhausted by his incessant devotion to studies requiring the most intense application, and it was judged expedient that he should retire into the country for a time in order to recruit his powers. Scarcely, however, was he settled in his place of retirement than he resumed his former pursuits, "the torrent of his genius that way being so much favoured by the solitariness of the place, and the favourable opportunity of examining insects in their very haunts and scenes of propagation."

In the years 1671 and 1672, Swammerdam's studies related principally to fishes and insects; and in the autumn of 1673, he completed his examination of the structure of bees, and published his treatise on those insects.

This work proved, we are told, "so fatiguing that he never after recovered even the appearance of his former health and vigour." We shall not be surprised at this melancholy result, when we learn that he was "continually employed in making observations, and almost as constantly engaged by night

in preparing drawings and suitable explanations. When it was summer time, his daily labour began at six in the morning, when the sun afforded him light enough to survey such minute objects; and from that hour till twelve, he continued without interruption, all the while exposed in the open air to the scorching heat of the sun, bareheaded, for fear of interrupting the light, and his head thus exposed to the full power of that luminary. "This fatigue he submitted to for a whole month together, without any interruption, merely to examine, describe, and represent the intestines of bees, besides many months more bestowed upon the other parts, during which time he spent whole days in making observations, as long as there was sufficient light; and whole nights in registering his observations, till at last he brought his work to the wished-for perfection. The better to accomplish his vast unlimited views, he often wished for a year of perpetual light and heat to perfect his experiments, with a polar night, to reap all the advantages of them by proper drawings and descriptions. In his essay on the Hemorobion, or Day-fly, he ingenuously confesses that his 'Treatise on Bees' was formed amid a thousand doubts and self-reproaches; for, on the one hand, his genius urged him to examine the miracles of the great Creator in His natural productions, whilst, on the other, the love

of that same all-perfect Being, deeply-rooted in his heart, struggled hard to persuade him that God alone, and not His creatures, was worthy of his researches, love, and attention."

Who can wonder, after reading this truly surprising account of Swammerdam's labours, that his health was irreparably injured, and that his mental powers were enfeebled? His temperament was constitutionally of a melancholy cast, and he had unhappily adopted the mystical views taught by A. Bourignon. He conceived that it was his duty to allow his mind no other occupation than that of abstract devotion, and determined that he would consecrate his thoughts entirely to the love and adoration of the great Creator, to whose honour alone, he publicly declared, he had commenced and prosecuted his many and great labours in the cultivation of natural history, from which he now entirely desisted, in order to devote all the little uncertain portion of life that remained to the solemn exercises of votion.

In order to procure himself a competent income, he next resolved to sell his museum, which was now become of great value, but could find no purchaser. In this dilemma he applied to his former friend M. Thevénot, hoping that, by his intervention, the Grand Duke of Tuscany might be induced

to become the possessor of such a treasure. But that prince declined to accept his overtures unless he would accompany the collection and settle at the Court of Florence, where he promised to give him a cordial reception, and make his life "easy and agreeable." These terms were of course declined, and Swammerdam remained entirely dependent on his father's liberality, who shortly after, on occasion of his daughter's marriage, relinquished housekeeping, and went to reside with her.

His biographer feelingly deplores the sad condition of the hapless naturalist, now left "to shift for himself;" and it seems certain that he must have been reduced to actual want had not his father's death, which almost immediately supervened, afforded him the prospect of a competent provision.

This event, however, was fraught with trouble, for it occasioned a family contest, in which, for the sake of peace and quietness, he relinquished his due share of the property. His health and spirits now rapidly sank, and he fell into a deep melancholy, doubtless occasioned by his painful maladies. A severe attack of his former complaints—the quartan ague—completely prostrated his remaining strength and confined him to his chamber, where he refused all the advice of his medical friends, and at length took refuge from their importunities

in an unbroken silence. Agonised with "constant and uninterrupted pains," this excellent man—who must undoubtedly be ranked among the numerous martyrs to science—expired at the early age of forty-four. Shortly before his decease, he earnestly recommended that his treatise on Bees should be published in Dutch as well as Latin, as displaying the wisdom and power of God in so particular a manner; and how much his pious soul was set upon glorifying the mighty Creator, whose works had afforded him such delight, is perceptible throughout all the pages of this work. His MSS. and plates he bequeathed to M. Thevénot; and after passing through several hands, they were purchased in 1727 by Boerhaave, who lost no time in giving them to the world. They form the well-known work entitled "Swammerdam's Book of Nature," to which the illustrious editor has prefixed the Memoir from which this sketch is made. He has given, at the close of it, a curious and interesting account of the instruments employed by Swammerdam to perfect his beautiful discoveries, which, I am persuaded, will interest the reader. "For dissecting very minute subjects, he had a brass table made on purpose, to which were fastened two brass arms, moveable at pleasure to any part of it; and the upper portions of these arms were likewise so contrived as to be susceptible of a

very slow vertical motion, by which means the operator could readily alter their height, as he saw most convenient to his purpose. The office of one of these arms was to hold the little corpuscule, and that of the other to apply the microscope. His microscopes were of various sizes and curvatures—his microscopical glasses being of various diameters and focusses, and, from the least to the greatest, the best that could be procured in regard to the exactness of the workmanship and the transparency of the substance.

His way was to begin his surveys with the smallest magnifiers, and from thence to proceed by degrees to the greatest; and by nature and use he was so incomparably dexterous in the management of them, that he made every observation subservient to the next, and all tend to confirm each other and complete the description. But the constructing of very fine scissors, and giving them an extreme sharpness, seems to have been his chief secret. These he made use of to cut very minute objects, because they dissected them equably, whereas knives and lancets, let them be ever so fine and sharp, are apt to injure delicate substances. His knives, lancets, and styles, were so very fine, that he could not see to sharp them without the aid of the microscope; but with them he could

dissect the intestines of bees with the same accuracy and distinctness that others do those of larger animals. He was particularly dexterous in the management of small tubes of glass, no thicker than a bristle, drawn to a very fine point at one end, but thicker at the other. These he made use of when he wanted to exhibit and inflate the smallest vessels discovered by the microscope, to trace, distinguish, and separate their courses and communications, or to inject them with very subtle coloured liquids."

We may have some idea how delicate and intricate must have been the operations of this skilful anatomist, when we learn that "he very often spent whole days in cleansing and preparing the body of a single caterpillar, in order to discover the true construction of that insect's heart!" At length he attained to an unequalled skill in this department of science, and as the result of his labours, completed a work which Boerhaave, with natural pride, rejoices over, as the production of one of his countrymen, who (he complains) "are in general so liberally reproached with a dulness that requires the inventions of others to sharpen it! I am, however, convinced," he adds, "that this instance will suffice to convince mankind that we have among us uncommon geniuses, who have made the most important discoveries, and, spider-

like, have furnished themselves alone both the workmanship and the materials."

The modesty of this truly great man did not allow him to perceive how much his own fame was destined to exceed that of the man he eulogized.

Alexander von Humboldt.

THE "Personal Narrative" of this renowned natural philosopher and traveller is replete with incidents of a romantic character; and amid the vast stores of curious and original information which he has detailed in his travels to the equinoctial regions of the New Continent, we find interspersed picture-scenes of great beauty and descriptive charm.

The reader may perhaps like to recall the circumstances under which this accomplished traveller commenced his career. M. de Humboldt was a Prussian gentleman of good estate, who devoted his time and his fortune to the pursuits of a liberal curiosity. Prompted by such motives, he began at the age of twenty-one to travel over Europe, and in the space of six years traversed its various countries. Returning to Paris in 1793, he was invited by the directors of the National Museum to accompany Captain Baudin in a voyage round the

world. M. Bonpland of Rochelle, an excellent naturalist, was named his associate in the expedition; but unfortunately the whole scheme was abandoned in consequence of the renewal of hostilities with Austria.

Disappointed in this plan, Humboldt resumed the project which he had before entertained of visiting, as a philosopher, the countries of the East. In that view he was anxious to join the celebrated expedition which had sailed to Egypt, thinking he might thence proceed to India; but the situation of France was becoming daily more critical, and the fortunes of war again proved a barrier to his proceeding. At length Humboldt went to Spain, where a brighter prospect opened. After residing some months at Madrid, he was, in the most liberal and flattering terms, permitted by the Spanish Court to visit her colonies in the New World. He immediately invited from Paris his friend Bonpland, whose profound skill in botany and zoology was equalled only by his indefatigable zeal; and without a moment's delay, these eager travellers, in June 1799, embarked at Corunna in a Spanish ship, and after a prosperous voyage arrived in the month of July at the port of Cumana, in South America. The rest of the year was spent in visiting the coast of Peru, the Indian missions of Chaymas, and the provinces of New Andalusia,

New Barcelona, Venezuela, and Spanish Guiana. Leaving the Caraccas, in January 1800 Humboldt and his companion visited the charming valleys of Araqua and the great lake of Valencia, which in its general appearance resembles that of Geneva, but has its banks clothed with all the luxuriant vegetation of a tropical climate. In Cura, one of its islets, they found cultivated a species of potato, yielding wholesome and pleasant fruit. From thence the travellers, directing their course southwards, crossed on horseback the vast plains of Caloboza, Apure, and Oroonoko. They next traversed the famous *Llanos*, an immense succession of deserts, stretching nearly 200 miles on a dead level, absolutely destitute of springs or rivulets, and only covered with a tall rank herbage. Over this desolate and pathless expanse they journeyed for whole days, without meeting a single shrub or a solitary cabin to refresh the eye, while they suffered extremely from the intense heat. At St Fernando, on the river Apure, they began a most fatiguing navigation of more than 3000 miles, which they performed in canoes. Sailing down the Apure, they entered the Oroonoko at the 7th degree of north latitude, and, remounting that noble stream, passed overland to the sources of the famous Rio Negro. About thirty Indians were employed to carry the canoes through lofty forests to the creek

of Pemichin. Following the current, they shot into the Rio Negro, on which they descended to Fort St Charles. From this point again they remounted by the Cassiquiari to the river Oronooko, and reached the mission of Esmeralda, whence they descended on the swelling stream to its mouth. This navigation down the Oronooko was the most painful and oppressive. They suffered from want of provisions during the day, and were drenched with torrents of rain during the night. Forced to seek shelter or a miserable subsistence among the woods, they were incessantly tormented by mosquitoes and countless varieties of noxious and loathsome insects. Nor could they venture to seek relief by bathing their parched bodies in the flood, since voracious fish and crocodiles watched them on every side. After escaping such complicated evils, and the dangerous effects of the exhalations caused by the burning sun, Humboldt and Bonpland returned to Cumana by the plains of Cari and the mission of the Caribs, a race of men quite distinct from any other, and perhaps, next to the Patagonians, the largest and stoutest in the whole world.

Such is the outline given of the first expedition of these two young men. The bare statement makes us feel what heroic courage and dauntless zeal must have inspired them. "Tantus amor."

For the sake of adventure and for the acquisition of knowledge, no sacrifice is too great.

Let us now draw from the pages of M. Humboldt a few of his animated pictures of nature and of his personal adventures amid these untrodden wilds. Here is a nocturnal scene on the banks of the river Apure:—

"The night was calm and serene, and there was a beautiful moonlight. The crocodiles were stretched along the shore. They placed themselves in such a manner as to be able to see the fire. We thought we observed that its splendour attracted them, as it attracts fishes, crayfish, and other inhabitants of the water. The Indians showed us the traces of three tigers in the sand, two of which were very young. A female had no doubt conducted her little ones to drink at the river. Finding no tree on the strand, we stuck our oars in the ground, and to these we fastened our hammocks. Everything passed tranquilly till eleven at night, and then a noise so terrific arose in the neighbouring forest, that it was almost impossible to close our eyes. Amid the cries of so many wild beasts howling at once, the Indians discriminated such only as were heard separately. These were the little soft cries of the sapajous, the moans of the alonates, the howlings of the tiger, the couguaz or American lion without mane, the pecari, and the

sloth, and the voices of the curassoa, the parraka, and some other gallinaceous birds. When the jaguars approached the skirt of the forest, our dog, which till then had never ceased barking, began to howl and seek for shelter beneath our hammocks. Sometimes, after a long silence, the cry of the tiger came from the top of the trees; and in this case it was followed by the sharp and long whistling of the monkeys, which appeared to flee from the danger that threatened them.

"I notice every circumstance of these nocturnal scenes, because, being recently embarked on the Rio Apure, we were not yet accustomed to them. We heard the same noises repeated during the course of whole months, whenever the forest approached the bed of the rivers.

"When the natives are interrogated on the causes of this tremendous noise made by the beasts of the forest at certain hours of the night, they reply gaily, "They are keeping the feast of the full moon." I believe this agitation is most frequently the effect of some contest that has arisen in the depths of the forest. The jaguars, for instance, pursue the peccaris and the tapirs, which, having no defence but in their numbers, flee in close troops, and break down the bushes they find in their way. Affrighted at this struggle, the timid and mistrustful monkeys answer from the tops of

the trees the cries of the large animals. They awaken the birds that live in society, and by degrees the whole assembly is in movement. We shall soon find that it is not always in a fine moonlight, but more particularly at the time of a storm and violent showers, that this tumult takes place among the wild beasts. 'May Heaven grant them a quiet night and repose, and us also!' said the monk who accompanied us to the Rio Negro, when, sinking with fatigue, he assisted in arranging our accommodations for the night. It was indeed a strange situation, to find no silence in the solitude of woods. In the inns of Spain we dread the sharp sounds of guitars from the next apartment; in those of the Oroonoko,—which are an open beach, or the shelter of a solitary tree,—we are afraid of being disturbed in our sleep by voices issuing from the forest."

Immediately succeeding this night-scene we have a striking account of the perils encountered by our travellers during the day-time:—"We stopped at noon in a desert spot, where I left my companions while they drew the boat to land, and were occupied in preparing our dinner. I went along the beach to observe nearer a group of crocodiles sleeping in the sun, and placed in such a manner as to have their tails, furnished with broad plates, resting on one another. Some little herons,

white as snow, walked along their backs, and even upon their heads, as if they were passing over trunks of trees. The crocodiles were of a greenish-gray, half covered with dried mud; from their colour and immobility, they might have been taken for statues of bronze. This excursion had nearly proved fatal to me. I had kept my eyes constantly turned toward the river; but, on picking up some spangles of mica, agglomerated together in the sand, I discovered the recent footsteps of a tiger, easily distinguishable from their form and size. The animal had gone towards the forest, and turning my eyes on that side, I found myself within eighty steps of a jaguar, lying under the thick foliage of a ceiba. No tiger had ever appeared to me so large. I was extremely frightened, yet sufficiently master of myself to enable me to follow the advice which the Indians had so often given us, how to act in such cases. I continued to walk on without running; avoided moving my arms, and thought I observed the attention of the brute was fixed on a herd of *capybaras* which were crossing the river. I then began to return, making a large circuit towards the edge of the water. As the distance increased I thought I might accelerate my pace. How often was I tempted to look back, in order to assure myself that I was not pursued! Happily I yielded very tardily to this desire. The

jaguar had remained motionless. I arrived at the boat out of breath and related my adventure to the Indians, who loaded their firelocks and accompanied us to the place where the animal had lain. He was there no longer, and it would have been imprudent to follow him into the forest."

Very curious is the account given by M. Humboldt of the ambulatory menagerie which he carried about with him during this part of his expedition. "In one of the huts of the Pacimonales (Indians) we made the acquisition of two large fine birds, a toucan and an emu, a species of macaw, seventeen inches long, having the whole body of a purple colour. We had already in our canoe seven parrots, two mannakins, a motmot, two guans, two manaviris, and eight monkeys. Father Zea (a Roman Catholic missionary, who accompanied the travellers) whispered some complaints at the daily augmentation of this collection! The toucan resembles the raven in its manners and intelligence. It is a courageous animal, but easily tamed. Its long and stout beak serves to defend it at a distance. It makes itself master of the house, steals whatever it can come at, and loves to bathe often and fish on the banks of the river. The toucan we had bought was very young; yet it took delight, during the whole voyage, in teasing the nocturnal monkeys, which are sad and passionate. This

bird makes extraordinary gestures when preparing to drink. The monks say that it makes the sign of the cross upon the water; and this popular belief has obtained for the toucan from the Creoles the name of *diostede* (God grant it thee). Most of our animals were confined in small willow cages, others ran at full liberty all over the boat. At the approach of rain the macaws sent forth frightful cries; the toucan wanted to gain the shore to fish; and the little monkeys, the titis, went in search of Father Zea, to take shelter in the large sleeves of his Franciscan habit. These scenes were often repeated, and made us forget the torment of the *moschettoes*. At night, when we rested, we placed a leather case containing our provisions in the centre; then our instruments and the cages of the animals; our hammocks were suspended around these, and beyond were those of the Indians. The exterior circle was formed by the fires which were lighted to keep off the jaguars of the forest."

Even this fiery defence encircling the encampment of the voyagers was not sufficient to preserve the enclosure inviolate. "Our satisfaction," says Humboldt, "was disturbed at our last resting-place on the Cassiquiare. We slept on the edge of a forest. In the middle of the night we were warned by the Indians that they heard very near us the cries of the jaguar, and that they came from the top of

some neighbouring trees. Such is the thickness of the forests in these regions that scarcely any animals are to be found there but such as climb trees, including various species of the feline genus. Our fires burning bright, and having by long habit become tranquil respecting dangers, we paid little attention to the cries of the jaguars. They were attracted by the smell and voice of our dog. This animal, which was of the mastiff breed, began at first to bark, and, when the tiger drew nearer, to howl, hiding himself beneath our hammocks. During our halts on the banks of the Rio Apure we had been accustomed to these alternations of courage and fear in this young animal, which was gentle, and extremely caressing. How great was our chagrin when in the morning we learned from the Indians that the dog had disappeared! There could be no doubt it had been carried off by the jaguars: we were often assured by the inhabitants of the banks of these rivers that the oldest jaguars, those that have probably hunted at night for several years, are sufficiently cunning to carry off animals from the midst of a halting-place, grasping the neck so as to prevent their cries. All our researches were vain; the dog which had accompanied us all the way from Caraccas, and which had frequently in swimming escaped the pursuit of the crocodiles, had been devoured in the forest. I mention this

incident merely to show the artifices of those large cats with spreckled coats."

Solitude the most profound, foliage the most luxuriant, and mosquitoes the most envenomed, were the three most striking characteristics of the river Cassiquiare. "Not five boats pass annually by its waters," says our traveller; "and since we left Maypures—that is, for a whole month—we had not met one living soul on the rivers as we ascended, except in the immediate neighbourhood of the missions. To the south of Lake Duractumuni we slept in a forest of palm-trees. It rained violently, but the pothoses, arums, and lianas furnished so thick a natural trellis, that we were sheltered as under a vault of foliage. The Indians, whose hammocks were placed on the edge of the river, interwove the heliconias and other plants so as to form a kind of roof over them. Our fires lighted up, to the height of fifty or sixty feet; the palm-trees, the lianas, loaded with flowers; and the columns of white smoke, ascending in a straight line towards the sky—the whole exhibited a magnificent spectacle; but, to enjoy it with tranquillity, we should have breathed an air free from insects. The mosquitoes, which tormented us during the day, accumulated towards evening beneath the roof of palm-leaves. Our hands and faces had never before been more swelled; Father Zea, who until then boasted of

having in his missions the largest and most valiant mosquitoes, at length gradually acknowledged that the sting of the insects of the Cassiquiare was the most painful he had ever felt. In these regions there is no more repose for the traveller. If he have any poetical remembrance of Dante, he will think he has entered the *citta dolente;* he will seem to read on the rocks around these memorable lines of the third Canto :

> 'Noi sem venuti al luogo, ov' i' t'ho detto
> Che tu vedrai le genti dolorose.'

"In the missions of the Oroonoko, the plague of the flies affords an inexhaustible subject of conversation. When two persons meet in the morning, the first questions they address to each other are, 'How did you find the zancudoes during the night? How are we to-day for the mosquitoes?' I doubt whether there is upon earth a country where man is exposed to more cruel torments in the rainy season.

"'How comfortable must people be in the moon!' said a Galiva Indian to Father Gumilla; 'she looks so beautiful and so clear, that she must be free from moschettoes.'

"These words, which denote the infancy of a people, are very remarkable. The earth is, to the American savage, the abode of the blessed, the country of abundance. The Esquimaux, whose riches are a plank, or a trunk of a tree carried by

the currents to his bare coast, sees in the moon plains covered with forests. The Indian of the forests of Oroonoko there beholds open savannahs, where the inhabitants are never stung by mosquitoes."

Another source of suffering to the travellers, especially while traversing the vast steppes or *Llanos* of these rivers, was the intense thirst occasioned by the heat and drought. One of the most striking scenes, on arriving at an encampment, was the dispersion of the animals, mules, and horses, in search of water. The poor brutes were set at liberty to go whither instinct directed in the savannah; and no sooner were they released than they rushed, their tail raised, their head thrown back, running against the wind, stopping, from time to time, as if they were exploring space, and at length announcing, by prolonged neighings, the neighbourhood of water. On one of these occasions, M. Humboldt says, "we followed our mules in search of a pool. After having passed two nights on horseback, and sought in vain by day for some shelter from the ardour of the sun beneath the tufts of the murichi palm-trees, we had arrived before night at a little farm called *El Cayman* (the alligator). It was a solitary house in the steppes, surrounded by a few small huts, covered with reeds and skins. We were covered with dust and tanned by the sandy wind, which burns the

skin still more than the rays of sun. We longed impatiently to take a bath, but we found only a great reservoir of feculent water, surrounded with palm-trees. The water was turbid, though, to our great astonishment, a little cooler than the air. We hastened to plunge into the pool, but scarcely had we begun to enjoy the coolness of the bath, when we heard on the opposite bank a noise which made us flee precipitately. It was an alligator plunging into the mud.

"We were only at the distance of a quarter of a league from the farm, yet we continued walking more than an hour without reaching it. We perceived, too late, that we had taken a false direction. We attempted to return to the spot where we had bathed, and we again walked three-quarters of an hour without finding the pool. Sometimes we thought we saw fire at the horizon; but it was the stars that were rising, and of which the image was enlarged by the vapours. After wandering a long time in the savannah, we seated ourselves beneath the trunk of a palm-tree, in a spot perfectly dry, surrounded by short grass for fear of the water-serpents. In proportion to the uncertainty of our situation, we were rejoiced by hearing from afar the sound of a horse advancing towards us. The rider was an Indian, armed with a lance, who had just made the round to collect the cattle of the neighbourhood. The sight of two white men, who said

they had lost their way, perplexed him, and we found it difficult to inspire him with confidence. At length he consented to guide us to the farm of the Cayman, but without slackening the gentle trot of his horse."

In order to escape the burning heat of the day, Humboldt determined to start next morning at two A.M., in the hope of reaching Calabozo, a small town situate in the midst of the Llanos. "The aspect of the country was the same. There was no moonlight; but the great masses of nebulæ that decorated the southern sky, enlightened, as they set, a part of the terrestrial horizon. The solemn spectacle of the starry vault, which displayed itself in its immense extent; the cool breeze that blew over the plain during the night; the waving motion of the grass wherever it had attained any height—everything recalled to mind the surface of the ocean. The illusion, above all, augments when the disk of the sun shows itself at the horizon, repeating its image by the effects of refraction, and soon, losing its flattened form, ascends rapidly and straight towards the zenith.

In proportion as the sun rose higher, and the earth and the strata of superincumbent air took different temperatures, the phenomenon of *mirage* displayed itself, with its numerous modifications. This phenomenon, the most anciently observed, has received in Sanscrit the expressive name of

desire (*thirst*) *of the antelope*, in allusion to those tracts destitute of vegetation, which appear like large lakes, with an undulating surface. We admire the frequent allusions in the Indian, Persian, and Arabic poets to the magical effects of terrestrial refraction. It was scarcely known to the Greeks and Romans. Proud of the riches of their soil, and the mild temperature of the air, they would have felt no envy of this poetry of the desert. It was born in Asia. The Oriental poets found its source in the nature of the country they inhabited; they were inspired by the aspect of those vast solitudes, interposed like arms of the sea or gulfs between lands adorned by Nature with her most luxuriant fertility."

One only additional quotation must suffice us. It depicts the emotions of M. Humboldt at sight of the Cataract of Maypures:—

"We were never weary of the view of this astonishing spectacle, concealed in one of the most remote corners of the earth. Arrived at the summit of a granitic ridge that rises from the Savannah, the eye suddenly takes in a sheet of foam extending a whole mile. Enormous masses of stone, black as iron, issue from its bosom. Some are grouped in pairs like basaltic hills, others resemble towers, strong castles, and ruined buildings. Their gloomy tint contrasts with the silvery splendour of the

foam. Every rock and islet is covered with vigorous trees, collected in clusters. Far as the eye can reach, a thick vapour is suspended over the river, and through this whitish fog the tops of the lofty palm-trees shoot up. The leafy plume of this palm-tree, the trunk of which is more than 80 feet high, rises almost straight toward heaven. At every hour of the day the sheet of foam displays different aspects. Sometimes the hilly islands and the palm-trees project their broad shadows; sometimes the rays of the setting sun are refracted in the humid cloud that shrouds the cataract. Coloured arcs are formed, and vanish and appear again alternately; light sport of the air, their images wave above the plain.

"I do not hesitate to repeat, that neither time nor any other sight of beauty has effaced from my mind the powerful impression of the aspect of the cataracts. When I read a description of those places in India that are embellished by running waters and a vigorous vegetation, my imagination recalls a sea of foam and palm-trees, the tops of which rise above a stratum of vapour. The majestic scenes of nature, like the sublime works of poetry and the arts, leave remembrances that are incessantly reviving, and through the whole of life mingle with all our feelings of what is grand and beautiful."

An Account of Joseph Dombey, the Botanist.

"Must I call madness or reason that desire which allures us to seek and examine plants? If I look back on the fate of naturalists, I am persuaded that the irresistible attractions of nature alone can induce us to face such dangers and troubles. No science had ever so many martyrs as natural history."—LINNÆUS.

THE prince of botanists did not speak unadvisedly when he uttered these memorable words. Long indeed is the roll-call of those who have fallen a sacrifice in this cause; and among them all, no name better deserves honourable remembrance than that of the French botanist and traveller, Joseph Dombey. The career of this individual, though full of romantic and touching interest, is comparatively little known, and I feel persuaded that a slight sketch of it will be acceptable to the reader.

He was born at Mâcon in 1742, and his parents were in humble circumstances, but did their best to give him a good education. Their cares, however, seemed at first to be but ungratefully repaid,

for the lad was idle and given to dissipation, and being harshly treated left his home. He had a relative at Montpellier in whom he found a friend; and resolving to embrace the study of medicine, he entered himself at the university of that town. There he imbibed, under the celebrated Professor Gouan, a taste for natural history, more especially for botany; and to this taste he sacrificed his profession, and resigned himself, regardless of consequences, to the full enjoyment of his new bent. The fine country around him filled him with delight. The south of France, with its varied and extensive coasts, its fertile plains, and its wild and lofty mountains, was his first theatre of observation. During the summer he roved at large; and when the season of the year obliged him to retire to his college, he returned to no studies but such as fostered and improved his proficiency in his darling pursuit. Whatever time was not devoted to that was given to pleasure and to the indulgence of youthful gaiety and folly. Happily for his moral character and his worldly interest, and probably also for his scientific success, he was induced to remove to Paris in 1772, to improve his botanical knowledge under the instructions of Jussieu and Lemounier. Three years later he travelled to Berne, and visited the great Haller, who welcomed with satisfaction a rising naturalist, uniting great

energy and zeal to an extent of scientific knowledge which presaged future excellence.

While botanising among the Alps during his return, Dombey received the welcome intelligence that M. Turgot had, on the recommendation of Jussieu, chosen him to go to Peru in search of plants which might with advantage be naturalised in Europe. He immediately returned (on foot) to Paris, and was presented to the minister, from whom he received his appointment, with a salary of 3000 livres. The purpose of the French authorities could not, however, be carried into effect without the permission of the Spanish Government, and this was not procured till the close of the year 1776. The intermediate period was devoted by our naturalist to a diligent and steady application, in order the more perfectly to qualify himself for his arduous and most congenial undertaking.

On arriving at Madrid in November 1776, his ardour met with several embarrassing checks in the tedious delays and misplaced jealousy of the Spanish Court, by whom he was encumbered with useless instructions, and four companions were associated with him, each of whom received a handsome salary. His patience and courage were proof against every annoyance: a new world was before him, and he cared for nothing save to be permitted

to pursue his course. At length, after nearly a year had elapsed, he embarked at Cadiz, and happily accomplished the voyage in six months, arriving at Lima in the spring of 1778, where he obtained a favourable reception from the viceroy and from M. de Bordenave, an old acquaintance of his illustrious friend Jussieu.

His first botanical expedition, towards Quito, was not without danger from hordes of runaway negroes; but he thought himself amply repaid by securing an abundant harvest of plants, as well as of antiquities, from the sepulchres of the ancient Peruvians. These, together with a collection of seeds, a fine herbarium, and a considerable quantity of platina, he immediately sent to Europe. The seeds had been partly picked up in the dry season from the arid sands around Lima, where they lay, blown about by the wind, or stored up by ants, awaiting the autumnal fogs necessary to their germination, for it never rains at Lima. He accompanied his collections with two manuscript treatises of his own; one on a disease which he attributed to the immoderate use of certain fruits of that country; and the other on a new but useless species of *Laurus*, which ignorant observers had reported to the Spanish Government as being the true cinnamon, a mistake which he found himself obliged to rectify. He was subsequently employed by the

viceroy to analyze some mineral waters of the neighbourhood; afterwards he settled for a time in the mountainous province of Tarma, beyond the Cordilleras, and in May 1780 visited Huanuco, the extremity of the Spanish settlements in that direction. In the vast and almost impervious forests beyond, he ascertained the fact which had been reported of the *Cinchona*, or Peruvian bark, being abundant there, though previously supposed to grow at Loxa only. He determined also that there were several species of this valuable drug, all more or less useful in medicine.

To investigate the botanical riches of these forests, swarming with insects, and filled with stagnant pestiferous vapours, proved a labour of no less danger than difficulty. There was besides another and a still more formidable obstacle than the natural obstructions presented by these wild regions. During one of his botanical expeditions his little company was attacked by a party of maroon negroes, against whom they defended themselves with so much courage that they succeeded in making their escape, and even took three prisoners. These savages determined to take their revenge, and having assembled to the number of two hundred, were advancing, under cover of the night, with the intention of plundering their camp, but happily, being made acquainted with their danger,

they effected a precipitate and perilous retreat to Huanuco. From thence Dombey returned alone to Lima, where various difficulties awaited him. He had lost all his outfit, and his pecuniary income was quite inadequate to his wants. The celebrated Necker, then in power, increased his salary, but still his funds were by no means so large as those of his Spanish associates. It is said that, notwithstanding this, he contrived to lend them, when they found themselves embarrassed, a considerable sum. The truth is, like many men of his stamp, Dombey was liberal to a fault when he had money in hand, and was frequently in difficulties owing to his imprudence and want of consideration. His kindly heart prompted him ever to do generous actions; and he frequently assisted the unfortunate, and bestowed on others what he could ill spare. He loved to spend; but, on the other hand, he knew how to bear privations. Sometimes he lived merrily, and had a numerous escort; at another time he would be content with a solitary attendant, and with poor fare.

That which most perturbed him, and upset his equanimity, was the opposition he encountered from the rich and ignorant, who despised his knowledge and thwarted him in his scientific objects. However, his medical information proved of great use to him during his residence in Lima; it aug-

mented his income, and gained him the respect and confidence of those who could not appreciate his skill as a naturalist. They were ready enough to be cured by the French savant, when they found him a more skilful leech than their own countrymen; and thus self-interest secured what merit and justice had failed to obtain for him. For the rest, he thoroughly enjoyed the amusements of the gay society with which for a time he mingled, and his lively manners and agreeable person made him a favourite in those assemblies over which the fair Limeñas presided.

The number and variety of the vegetable productions of the country afforded a rich treat to our naturalist. In a climate so favourable to all kinds of vegetation, tropical and equinoctial fruits and flowers abound. The predominant colour of the flowers of indigenous plants upon the coast being yellow, while those of the mountains are white, the natives have a common proverb, "Ora en la costa, plata en la sierra" (Gold on the coast, silver in the mountains). One of the attractions of Lima is its orchards; they are described as being always beautiful. Unlike those of Europe, the native fruit-trees are evergreens, and present the garb of spring during the whole year. The rich green of the banana and plantain, their enormous leaves rustling with every breeze and discovering their

pendant branches of fruit; the orange-tree, enamelled with green and white and gold; the pomegranate, with its crimson bell; the shady chirimoya, breathing aroma in the evening breeze; the trailing grandilla, stretching from tree to tree, and seeking support for its slender and laden branches; the luxuriant vine, creeping over trellises and hiding beneath its cooling leaves the luscious grape;—all these, and many others, abound in every garden of the broad and fertile plain watered by the Rimac. What an Elysium for the naturalist!

Having despatched his second collection to Europe, Dombey returned to Huanuco in the month of December 1780. There, to the other difficulties of his situation, were added the horrors of a desolating civil war. The Indians rose in insurrection under the leadership of Tupac Amaru, who claimed to be a descendant of the last of the Incas. The popularity of his cause soon attracted to his standard a multitude of undisciplined Indians, whose desperate valour, of which even the women partook, seemed for a time to counterbalance the discipline, the arms, and the skill of their opponents. The town of Huanuco was in the utmost consternation; a man of courage and energy like Dombey could not remain inert at such a moment; he made his appearance at the general council of the inhabitants, and warmly urged the Spaniards

to repel the insurgents ; at the same time he offered himself to aid the cause, by presenting a sum of 1000 piastres, twenty loads of corn, and two regiments, raised and equipped at his expense. Though his pecuniary assistance was very properly declined, his zeal was publicly applauded by all orders of people, and testified by authentic documents expressive of their gratitude. When the insurrection was quelled, Dombey generously presented to the hospital of St Jean de Dieu the sum he had offered towards the defence of the state.

Shortly after these events he returned to Lima, where he had the mortification of hearing that his first collection had been captured by the English, and redeemed at Lisbon by the Spanish Government. In consequence of this mishap, a very valuable part of it, the ancient Peruvian vases, and a complete dress of one of the Incas, which he had destined for his own sovereign, had been presented to the Spanish monarch ; duplicates of the dried plants and seeds only having been forwarded to Paris.

In the meantime, though enfeebled by his long and laborious journeys, Dombey determined to accomplish a visit to Chili ; and leaving his more recent acquisitions in safety at Lima, he commenced his undertaking. This had been from the first a principal object of his mission, on account of

the nearer resemblance of the climate of Chili to that of France, which rendered its vegetable productions more likely to be of use there. He arrived at La Conception in the beginning of 1782, where his adventurous destiny had prepared for him far other cares and pursuits than those of botany. The town was afflicted with a pestilential fever, and he was cautioned to avoid certain infected houses where it raged. Instead of following this advice, he devoted himself to the exercise of his medical skill, and assisted the sufferers among the poorer class with the most valuable charity of his advice, as well as with food and with medicine, and even with nurses, whom he supplied at his own charge. This example did much to restore public confidence, and his generous and self-denying conduct operated so powerfully upon the grateful people, that they strove to induce him to remain among them, promising him a handsome stipend as their physician. It is intimated that other and more tempting attractions were not wanting to induce him to comply with these wishes, and that one of the principal dignitaries of the Church of La Conception endeavoured to promote his union with a young lady of great beauty and riches, on whom his merit had made impressions as honourable to herself as to him. From motives of mistaken patriotism he tore himself away, to pursue the primary object of

his life—an object which, as subsequent events proved, would have been best fulfilled by his permanent residence in Chili, from whence he might at leisure have communicated the subsequent fruits of his inquiries. But the restless and enterprising spirit of Dombey urged him onwards, and labour and sorrow were his appointed lot. During this journey he discovered the majestic tree of the tribe of Pines, 150 feet high, named by Lamarck *Dombeya*, in honour of his meritorious and unfortunate countryman; and having added greatly to his collection of drawings, shells, and minerals, as well as plants, while in Chili, and discovered a new and most valuable mine of quicksilver and another of gold, he revisited Lima to take his passage for Europe.

While he still remained at Lima, the labours of arranging and packing his collections of natural history, added to the fatigues he had already undergone, and the troubles he experienced from some of the Spaniards in power, preyed upon his health and spirits; and under the idea that he might possibly never reach Europe, he wrote to his friend Thouin to take the necessary precautions for the safety of his treasures on their arrival in a Spanish port. He survived, however, to undergo far greater distresses than he had yet known. After narrowly escaping shipwreck at Cape Horn, and being obliged

to wait at the Brazils till his ship could be refitted, he reached Cadiz on the 22d February 1785; "but instead (says his biographer) of the reception he expected and deserved from the nation he had chiefly benefited, every Spaniard, from the subalterns of the customhouse to the ministers of state, seemed leagued to mortify him and to render his labours useless. His collections were exposed to the rude and useless scrutiny of the barbarians at the customhouse, so as to be rendered useless, in a great measure, even to those who meant to plunder them. The whole were thrown afterwards into damp warehouses, where they lay for the plants to rot, and the inestimable collections of seeds to lose their powers of vegetation, till certain forms of the grave and sapient most Catholic Church were gone through. He could never obtain that the seeds should be committed to the earth so as to be of use, and hence the gardens of Europe were never enriched with more than some half score of his botanical discoveries, among which were the magnificent *Datura arborea*, the beautiful *Salvia formosa*, and the fragrant *Verbena triphylla;* this last will be a '*monumentum ære perennius*' with those who shall ever know his history."*

Disappointed and foiled, Dombey was compelled to remain at Cadiz without friends, whose sympathy

* See art. "Dombey" in "Rees' Cyclopædia," by Sir J. E. Smith.

might have cheered him, his only hope being that he might hereafter publish his discoveries, so as to secure some benefit to the world and some honour to himself. But this last consolation was denied him. He was not suffered to depart till all his MSS. had been copied, and he had given a written promise never to publish anything till the return of his travelling companions. In the meanwhile those very companions were detained by authority in Peru; and in after times many of the original botanical descriptions of Dombey appeared verbatim, without acknowledgment, in the pompous *Flora* of Peru and Chili, which thence derived a great part of its value. Thus chagrined and oppressed, the unhappy Dombey was permitted to return—with such part of his collections as they suffered him to retain—to Paris.

There, in 1786, he appeared, "no longer (says the same writer) the handsome lively votary of pleasure, nor even the ardent enthusiastic cultivator of science. The leaden hand of tyranny had impressed its own stamp on his countenance, and he had the sallow, silent, melancholy aspect of a depressed and disappointed Spaniard. He chiefly associated with his faithful friends Le Mounier and Thouin, and in their society botanical converse still retained its charms. To the contents of his own collection, which, however injured and diminished,

was still a very interesting one, he paid little attention. Bound by his promise, his high sense of honour would not let him make the proper use of it; but at length he was induced to part with it to M. de Buffon, who nobly exerted himself so as to procure from Government a pension of 6000 livres for Dombey, and 60,000 livres to pay his debts."

Disheartened and exhausted with fatigue and blighted hopes, Dombey now determined to seek retirement in a peaceful retreat at the foot of Mont Jura, where he had a friend devoted to the love and cultivation of plants. He broke off all scientific correspondence except with M. Pavon, one of his fellow-labourers in Peru, who had all along been innocent of the malicious attacks against him. He refused a place in the French Academie des Sciences, as well as a large pecuniary offer from the Empress of Russia for the duplicates of his collection, saying, "he was not in want of money, and had most pleasure in distributing his specimens among his friends." His only remaining happiness was in deeds of benevolence; and he was sometimes heard to say, "I am satisfied, for I have had it in my power to-day to benefit a fellow-creature."

On his way to Switzerland he took up his residence for some time at Lyons, and had the misfortune to be present during the siege of that town.

All his energy of mind revived at the sight of distress and danger, and those who were ready to perish experienced the consolation of such assistance as he had it in his power to bestow. He supplied their necessities and healed their wounds. But his soul sickened at the sight of public miseries on every side which he was unable to alleviate, and at the end of some months he returned to Paris, and procured a commission to visit North America, in order to purchase corn from the United States, and to fulfil some other commissions relative to science and commerce.

A tempest obliged him to take shelter at Guadalope, which ill-fated island was then in as distracted a state as the mother country. Dombey, having been sent out by the French Republic, was an object of suspicion to the Royalist governor, and being summoned to appear before him, judged it prudent to retire on board a vessel bound for Philadelphia.

Before however he could embark, he was seized and thrown into prison. A proceeding so violent and unjustifiable excited general indignation, and the authorities thought proper to release him, but not before a public commotion had been excited on his behalf; and while trying to appease the tumultuous mob which threatened vengeance on his enemies, he was accidentally thrown into a

river, the consequences of which disaster were nearly fatal to his life.

When sufficiently recovered, he waited on the governor; and though his innocence was acknowledged, he was commanded to quit the colony without delay.

His unhappy fate still pursued him; for the vessel in which he sailed was scarcely out of the harbour when it was attacked by two privateers and captured, and Dombey, disguised as a Spanish sailor, was thrown into prison in the island of Monserrat, where ill-treatment, grief, and disease, put a period to his eventful life in the spring of 1796.

An Incident in the Life of Dufresnoy.

ANDRÈ DUFRESNOY was born at Valenciennes in 1733. He embraced the medical profession, and was appointed physician of the military hospital in his native city, and, being a considerable proficient in botany, was also a professor of that science. In 1793 he received the appointment of physician-in-chief to the Army of the North. His predecessor in that post having remained at Brussels after the defection of General Dumouriez, had been proscribed and put on the list of the émigrés. Dufresnoy learned that he was sick, and was anxious to return to his native land; and, prompted by his generous heart, he ventured to write in favour of the unfortunate man to the Minister of War. This humane and courageous act was taken in very ill part by the authorities; and Dufresnoy, accused of complicity with an émigré, was, in consequence, deposed from

his situation. A universal expression of dissatisfaction throughout the ranks of the army gave unmistakable proof that the blow had fallen upon a worthy and deserving man. Even the most ardent republicans, those who had denounced the so-called aristocrats, made application in favour of Dufresnoy. The result was a partial retraction of the severity of the sentence against him. The minister wrote to the Committee of Public Safety that Dufresnoy might probably have been innocent of any bad intention in the application he had made on behalf of his predecessor, but that, as he had given proof of a weakness incompatible with the duties of a firm republican, he could not efficiently occupy the post of physician-in-chief to the Army of the North, since that official must necessarily be brought in to contact with a vast number of soldiers over whom he must exercise considerable influence, and consequently he would be required to serve the state as much by his devotedness as a citizen as by his medical skill. Dufresnoy was consequently sent to St Omer, to superintend the military hospital there. But he was now a suspected man, and in a short time a new and much more alarming accusation was brought against him, which was very near conducting him to the scaffold.

Dufresnoy had been the first to introduce into France the cultivation of the *Rhus radicans;* he

had long cultivated it at Valenciennes, and had given some of the plants to a medical botanist at Cambray. Having received intelligence from this friend that these offshoots from his treasured shrub were flourishing, in a letter addressed to him, he made use of this expression :—" Comment vont nos chers Rhus ? Qu'il me tard de les voir !" This letter, written by an *homme suspect*, was intercepted and read before the Revolutionary Committee. Here was a discovery for these patriotic citizens ! The Empress of Russia was about to join the allied forces, and Dufresnoy, with his aristocratic tendencies, was in intelligence with that sovereign ; for they are doubtless the *Russians* whom he is so impatient to see ; the thing is clearly proved !

Immediately an order of arrest was made out, and the traitorous physician brought up before the Revolutionary tribunal of Arras, at that time presided over by the atrocious Lebon, the monster who sentenced to the scaffold a quiet and inoffensive citizen, solely because he had in his possession a parroquet which cried " Vive le Roy !" It was seriously proposed (by the way) to guillotine the bird as well as his owner, but Lebon's wife saved the creature by undertaking that he should be taught to say " Vive la Montagne."

In the hands of this bloodthirsty wretch, Dufresnoy would have had no chance of escape. His

trial was already about to commence, and he would infallibly have suffered death, because the members of the Revolutionary Committee were ignorant of the meaning of a botanical word, when, providentially, the 9th Thermidor arrived precisely at this critical time; Lebon himself was arrested, and the naturalist had an opportunity of explaining to his judges that his "chers Rhus" were not soldiers armed against liberty, but plants, the juice of which, as he conceived, would prove highly beneficial as a medical remedy. The worthy man was consequently restored to freedom and sent back to the hospital at Valenciennes, where he continued to discharge his duties and cultivate his Rhus as long as he lived. Dufresnoy, for the rest, was an enthusiast in his notions as to his favourite plants and herbs, and it appears some of his supposed discoveries turned out to be fallacies. In point of fact, he was no sooner dead than his brother, who practised medicine at Valenciennes, plucked up from his garden the unfortunate Rhus which had so nearly proved fatal to their cultivator.*

* It may interest some readers to be told that *Rhus* in botany is the name given to a shrubby, arborescent genus, known in our gardens as the sumach. There are numerous species, some of which are poisonous. The *Rhus toxicodendron* and *radicans* were at one time recommended in paralytic affections; "but the cases in which these virulent plants were employed are few and indecisive."

Adventures of a Missionary Naturalist

IN THE NICOBAR ISLANDS.

IN the year 1756 a commercial establishment was begun by the Danes on the Nicobar Islands; and shortly after a band of devoted missionaries belonging to the Church of the United Brethren settled there, for the purpose of endeavouring to convert the natives to the Christian faith. Among these heroic men was one named John Gottfried Haensel, who during seven years remained at his post until he was the sole survivor, and was compelled to abandon that melancholy field of labour which had proved fatal to all his associates, who had found an untimely grave in Nancauwery, the island on which they had resided.

In a series of curious and valuable letters Haensel has described this group, with their inhabitants and natural productions; and in his account of the

latter there are some details of peculiar interest, occasioned by the sympathy awakened on behalf of the simple-minded, self-sacrificing man, who tells the touching tale of his labours and sufferings.

After clearing and planting the land in order to procure themselves the necessaries of life, the Brethren endeavoured to lessen the expenses of the mission by making collections of shells, serpents, insects, and other natural curiosities, for which there was a ready sale in various parts of Europe. At one time Haensel especially devoted his attention to this occupation; and though possessing no previous acquaintance with natural history, he by constant practice and experience acquired considerable skill as a collector. During his frequent excursions along the sea-coast, it sometimes happened that the solitary wanderer was benighted, and could not reach his dwelling; but in such a case he was never at a loss for a bed. "The greater part of the beach," he tells us, "consisted of a remarkably fine white sand, which above high-water mark was perfectly clean and dry. Into this I dug with ease a hole large enough to contain my body, forming a mound as a pillow for my head. I then lay down, and, by collecting the sand over me, buried myself in it up to my neck. My faithful dog always lay across my body, ready to give the alarm in case of disturbance from any

quarter. However, I was under no apprehension from wild animals; crocodiles and caymans never haunt the open coast, but keep in creeks and lagoons, and there are no ravenous beasts on the island. The only annoyance I suffered was from the nocturnal perambulations of an immense variety of crabs of all sizes, the grating noise of whose armour would sometimes keep me awake. But they were well watched by my dog; and if any one ventured to approach, he was sure to be suddenly seized and thrown to a more respectful distance; or, if a crab of more tremendous appearance deterred the dog from exposing his nose to its claws, he would bark and frighten it away, by which, however, I was often more seriously alarmed than the occasion required. Many a comfortable night's rest have I had in these sepulchral dormitories when the nights were clear and dry."

But although there was little to fear from the attacks of savage animals on Nancauwery, Haensel assures us that it would have been hazardous in the extreme to expose oneself thus on the Continent, as well as in some of the other East Indian islands, on account of the numbers of these creatures of various descriptions with which they abound. He was himself in imminent peril on one of his voyages either to or from Queda. A Danish ship hailed their vessel, and approaching them in-

cautiously, ran foul of the stern and broke the flag-staff. They therefore put into a creek, and some of the men landed near a wood to fell a tree to make a new staff. Hoping to be able to procure some fresh meat for supper, Mr Haensel accompanied them, armed with his double-barrelled gun. While they were at their work he walked outside the thicket, eagerly searching for game, and soon discovered among the high grass an object which, by its motions, he mistook for the back of a hare. He took aim, and was just about to fire, when the animal rose up and proved to be a tiger, of which the top of the head only had been visible. Involuntarily he dropt his arm and stood motionless with horror, expecting that the creature would immediately make a spring at him. He had given himself up for lost, but, providentially, the beast appeared as much alarmed as he was, and after looking at him for a few moments, turned slowly about and began to creep away, like a frightened cat, with his belly close to the ground; then, gradually quickening his pace, fled with precipitation into the wood.

Some time elapsed before the missionary recovered self-possession sufficient to retrace his steps to the beach, for he felt his very heart tremble within him (as he forcibly expresses himself). His perils, however, were not yet ended. As he ap-

proached the water there was a piece of jungle, or low thicket, before him, and he was turning to the left in order to pass round by the side opposite the boat, thinking he might yet find game, when seeing the men labouring hard to drag the tree they had felled towards the water, he altered his course and went to their assistance. No sooner had he entered the boat than he discovered, on that side of the jungle to which he was first going, a large cayman, close to the beach, watching their motions. Had he gone the way he purposed, he must certainly have encountered this monster, and most thankful did he feel for this second preservation of his life. He adds—"Part of the flesh of the cayman is good and wholesome, when well cooked. It tastes somewhat like pork, for which I took it and ate it with much relish when I first came to the island, till, discovering what it was, I felt a loathing which I could never overcome; but it is eaten by both natives and Europeans."

Serpents abound in the Nicobar Islands, though not in such numbers as on the coast of Coromandel. Of some of the more rare and curious, Haensel has given a striking account. "I wish I could gratify you," he says, "with a list of the different kinds of serpents, crabs, spiders, and other creatures which I caught everywhere, either to stuff, put into spirits, or otherwise prepare for my customers. At our

garden near Tranquebar, I had a shop or work-room purposely constructed for these operations, and kept sometimes two or three Malabar boys at work to help me. Of serpents and snakes I had a list of upwards of eighty different species, from the size of a common worm to 16 and 20 feet long; of crabs, upwards of ninety; and of spiders, more than forty. Whether I went into the woods, on the beach, by land, or by sea, I was accustomed to look about and examine every object I saw, and acquired great facility in catching some of the most dangerous animals without harm to myself. Far from being afraid of serpents, I went out purposely to discover their haunts, in the jungle or among the rocks, defending my legs with a pair of strong boots; and if I could prevent their slipping off into their holes, and irritate them so as to make them attempt to strike me, my work was done. A serpent thus situated, will coil himself up, and instantaneously darting forward his head, strike and bite whatever comes in his way. I then presented my hat, which the animal violently seized with his fangs; when, instantly snatching it away, I seldom failed to extract them by the sudden jerk; for, being curved, they cannot be readily withdrawn, and, sitting but loosely in the gums, are easily disengaged. Being thus rendered in a great degree harmless, I pinned their heads down, and tied them up.

"There is among them a short serpent, found in the neighbourhood of Tranquebar, and called by us the *Split Snake.* It is black, with a white streak down its back, dividing the body longitudinally. Its bite is extremely venomous; and being slender, it can insinuate itself into a very small hole or cranny, and will enter rooms and closets in search of food. There was a door in a dark part of my workroom, with a large clumsy lock to it. One evening as I was attempting to open it, having to pass that way, I felt a sudden prick in my finger, and at the same time a violent electrical shock, as if I were riven asunder. Not thinking of a serpent, I at first imagined that my Malabar boys had, in their play, wound some wire about the handle, by which I had been hurt, and asked them sharply what mischief they had done to the door. They denied having meddled with it, and I made a second attempt, when I was attacked still more violently, and perceived the blood trickling down my finger. I then returned into my room, sucking the wound till I could draw no more blood, I applied some spirits of turpentine to it, put on a bandage, and being much hurried that evening with business made no further investigation into it. However, in the night it swelled, and was very painful. In the morning I went again into the workroom, when I thought I perceived an unpleasant musky smell.

On approaching the same door the stench was intolerable, and again I asked the boys the cause of the nuisance; but they persisted in declaring their ignorance concerning the matter. A candle was brought, and I now beheld the origin of all the mischief. About six inches length of the head and body of a young split snake hung out of the keyhole, quite dead; and on taking off the lock, I found the creature twisted into it. It had evidently intended to enter the room through the keyhole when I thus accidentally stopped its progress and got bitten; and considering the deadly poison this serpent injects into the wound it inflicts, I felt very thankful to God, my Preserver, that, by sucking the infected blood out of my finger in time, and applying a proper remedy, though ignorant of the cause of the wound, my life was not endangered.

"Another kind of serpent struck me as a singular species; it is of a green colour, has a broad head and mouth like a frog, very red eyes, and its bite is so venomous that I have seen a woman die within half an hour after being wounded. Of other remarkable kinds I will only mention the *Whip-snake*, which is green, from 4 to 6 feet long, slender, and springs horizontally from tree to tree, whence it is also called *Flying Snake*. The species known by the name of the *Double-headed Snake* has not two heads, but is equally thick behind and before,

and, like some caterpillars, furnished with a kind of protuberance at its tail, which, to a superficial observer, may pass for another head. They are of a reddish colour, and resemble a long sausage. The *Wall Snake* climbs a wall with great agility, and is small and spotted. The bite of all these serpents is attended with great danger."

By this incident of the split snake, I am reminded of a similar peril and escape, mentioned in the history of another of the Moravians. Lewis Dachne was residing in Berbice, in a solitary hut, on the borders of the Corentyn, a river shaded by immense forests and bordered by extensive swamps, the lurking-places of wild beasts, serpents, and other noxious creatures. For about two years this devoted missionary remained in this savage desert alone, unbefriended and without companions. Yet he was content and happy, fearless of evil, believing himself to be at the post of duty, and not only enjoying the internal consciousness of the Divine favour, but he experienced some remarkable deliverances from imminent peril. One of them is thus related. Being one evening attacked with a paroxysm of fever, he felt himself compelled to retire to his hut and lie down in his hammock. Just, however, as he entered the door, he beheld a serpent in the act of dropping down upon him from the roof. In the scuffle which ensued the reptile bit him in two or

three places, and, pursuing him closely, twined itself several times around his head and neck, as tightly as possible. Expecting now to be strangled to death, he gave himself up for lost, and afraid lest his brethren should suspect that the Indians had murdered him, he, with surprising presence of mind, wrote with a piece of chalk upon his table—"A serpent has killed me." Suddenly, however, the promise of the Saviour darted into his mind: "They shall take up serpents and shall not be hurt." Animated by the recollection of these words, he seized the creature, and exerting his utmost force, tore it loose from his body and flung it out of the hut. He then lay down in his hammock and slept tranquilly; nor did he experience any serious injury from the wounds inflicted by the serpent, which was probably one of that class whose bite is not venomous, but which destroy life by strangulation.

To return to our missionary naturalist. Decidedly the most valuable natural production, in a commercial point of view, of the Nicobar Islands, are the nests of the esculent swallow (*Hirundo edulis*), called by the natives *Hinlene*. As is well known, these singular constructions are not only eatable, but considered one of the greatest delicacies of the table by the luxurious Asiatics. They are composed of some gelatinous substance, about the materials of which authors generally differ. Some

have imagined it to consist of sea-worms, of the mollusca order. Forester conceives it to be the sea-qualm, a sort of cuttle-fish found in those seas, or a glutinous sea-plant called *agal-agal.* Again, it has been supposed they rob other birds of their eggs, and apply the whites of them to their building purposes.

Haensel's account is curious and unique. He says they build in fissures and cavities of rocks, especially in such as open to the south. In the latter the finest and whitest nests are found. They are small, and shaped like swallows' nests. If perfect, seventy-two of them go to a *catty*, or $1\frac{3}{4}$ pounds. The best sale for them is in China. As to the substance of which they are made, Haensel says—"After the most diligent investigation, I was never able fully to discover this point; nor do any of the opinions of naturalists with which I have become acquainted appear satisfactory to me, neither have the authors alluded to ever seen the birds. They have remarkably short legs, and are unable to rise if they once fall or settle on the ground. I caught many in this state, and after examining them threw them up into the air, when they immediately flew away; they cannot, therefore, as some suppose, obtain their materials on the coast and from rocks in the sea. My opinion is, that the nests are made of the gum of a peculiar

tree, called by some the Nicobar cedar, and growing in great abundance in all the southern islands. Its wood is hard, black, and very heavy. From December to May it is covered with blossom, and bears a fruit somewhat resembling a cedar or pine-apple, but more like a berry, full of eyes or pustules, discharging a gum or resinous fluid. About these trees, when in bloom or bearing fruit, I have seen innumerable flocks of these little birds, flying and fluttering like bees round a tree or shrub in full flower, and am of opinion that they there gather the materials for their nests. I relate the fact, having often watched them with great attention, but will not venture to affirm that I have made a full discovery. I observed before, that these birds dwell in cavities of rocks, like bees in a hive, flying in and out, and building their nests together, like martins or swallows. The hen constructs a neat, large, well-shaped nest, calculated for laying and hatching her eggs, and the cock contrives to fix another, smaller and rather more clumsy, close to his mate; for they are not built for the purpose of laying eggs, but for resting-places, whence they may take wing. If they are robbed of them, they immediately begin to build others, and being remarkably active, are able to finish enough in a day to support the weight of their bodies, though they require about three weeks

to complete a nest. During the N.E. trade-wind they are all alive and fly about briskly; but as soon as the wind comes round to the S.W., they sit or lie in their nests in a state of stupor, and show animation only by a kind of tremulous motion over their whole body. If their nests were taken away at that season, the poor birds must inevitably perish."

These birds' nests were the occasion, incidentally, of no small trouble and danger to the missionaries. They brought a great number, both of Malays and Chinese, to the coasts in search of them. These marauders always caused much confusion and quarrelling among the otherwise peaceable islanders, by their knavery and frequent assassinations; and on one occasion, having conceived a grudge against Mr Haensel, who, having been appointed temporary president for the King of Denmark, considered it his duty to protest against a robbery they wanted to commit. They threatened to have their revenge by killing him, and the natives, who knew them well, said they would be as good as their word. These poor people, though unimpressed by the religious teaching of the Brethren, were gratefully attached to them for all their kindness, and offered to stay at night and defend them; but not apparently sharing in the alarm, Haensel dismissed them to their own homes, and the mission family prepared

to retire to rest. To their terror, they shortly after heard a violent knocking at the door, and on looking out perceived a number of Malays surrounding the entrance. These miserable wretches speedily forced an entrance, and after a short parley, some of them drew their daggers, and showed how they were tipped with poison. "They looked," says our friend, "more like a host of devils than a company of human beings, and all on a sudden seemed about to make a rush upon me. I commended myself in silence to my Almighty Helper, and awaited the issue calmly. To my surprise they drew back, leaving me unharmed, and one by one left me standing alone in perfect astonishment. As soon as they were gone, I fell on my knees, and with tears gave thanks to God my Saviour, who had rescued me out of the hands of these savages."

In all probability, the perfect self-possession and calm demeanour of this remarkable man were the cause, providentially overruled, of cowing the spirits of the Malays, who ascribed their conduct, when questioned about it, to sorcery, saying that the missionary had bewitched them, so that they could do nothing to him.

The termination of the Nicobar mission was a truly melancholy one. The loss of so many valuable lives, and the entire failure of the object of the mission, at length compelled the abandonment of

the project. "Words cannot express," exclaims Haensel, as he tells the tale, "the painful sensations that filled my mind when I was taking my last farewell of the inhabitants, who flocked to me from all the adjacent islands. Their grief was very affecting, as they wept and howled, begging that the Brethren might soon return to them; for we had always enjoyed their esteem and love, and had always found them ready to serve us. When I remembered the numberless prayers, sighs, and tears offered up for the conversion of the poor heathen here, and beheld our burial-ground, where eleven of my companions had their resting-place, I burst into tears and exclaimed, "Surely all this cannot have been done in vain!"

Passages in the Life of John Sibthorp.

THIS eminent botanist and traveller was the son of Dr Humphrey Sibthorp, Professor of Botany at Oxford, and was born in that city in 1758. Being brought up to the medical profession, he prosecuted his studies at Edinburgh, where the taste he had early imbibed for natural history, especially botany, was cultivated and increased. At the close of his academical course he visited France and Switzerland, and spent a considerable time at Montpellier, where he communicated to the Academy des Sciences of that town an account of his numerous botanical discoveries in the neighbourhood, and was enrolled a member of that society.

Having conceived the desire of visiting Greece for the purpose of botanical investigation, he passed part of the year 1784 at Gottingen, and afterwards made the tour of Germany. Proceeding to Vienna, he cultivated the friendship of the principal professors of his favourite science there, studied with

peculiar care the celebrated manuscript of Dioscorides, so long preserved in the imperial library, and secured the services of a most excellent draughtsman, Mr F. Bauer, to be the companion of his projected expedition.

In 1786 they sailed from Naples to Crete, and here, in the month of June, our botanical adventurers rejoicingly beheld Flora in her gayest attire: "The snowy covering of the Sphaciote mountains was withdrawing, and a tribe of lovely little blossoms were just peeping through the vale." The ensuing winter was spent by Dr S. at Constantinople, and his residence there, and in the neighbouring Isle of Karki, proved favourable to his investigation of the fishes and birds of those regions, by which he was enabled to throw much light on the writings of ancient naturalists. In the early spring he proceeded to Cyprus, where a sojourn of five weeks enabled him to draw up a Fauna and Flora of that island. The illustration of the writings of Dioscorides in particular was a principal object with him; the names and reputed virtues of several plants recorded by that ancient writer, and still traditionally retained by the Athenian shepherds, served occasionally to elucidate or confirm their identity. The first sketch of the *Flora Græca* comprised about 850 plants. "This," said the author, "may be considered as contain-

ing only the plants observed by me in the environs of Athens, on the snowy heights of the Grecian alp Parnassus, the steep precipices of Delphis, the empurpled mountain of Hymettus, the Pentele, the lower hills about the Piræus, the olive-grounds about Athens, and the fertile plains of Bœotia. My intention was to have travelled by land through Greece; but the disturbed state of this country, on the eve of a Russian war, the rebellion of the Bashaws, and the plague at Larissa, rendered my project impracticable." Arrived at Athens, in the month of June our botanist prosecuted his journeys in various directions and with different success. The ascent of Mount Delphis, in Negropont, in a storm of wind and rain, was one of his most laborious if not perilous adventures; but his floral harvest was abundant. With regard to scenery, Mount Athos, which he visited a week after, seems to have made most impression on his mind. This spot also greatly enriched his collection of rare plants. From thence he proceeded to Thessalonia, Corinth, and Patras, at which last place he embarked on board an English vessel, and, after a tedious and stormy voyage arrived at Bristol in the first week of December 1787.

On his return to his native land, Dr Sibthorp was everywhere welcomed and admired for his ardour, his talents, and his acquirements. His

merits procured him the rank of Regius Professor at Oxford; he became a Fellow of the Royal Society in 1789, and was among the first members of the Linnæan Society, founded in 1788. Yet, though placed, a few years after his return, in very affluent circumstances, and though his necessary attention to his landed property and to agricultural pursuits, of which he was passionately fond, might have been expected in some measure to turn him aside from his botanical labours, he steadily persisted in the pursuit of his chosen object, to which he finally sacrificed life itself. "No name," says his biographer, Sir James Edward Smith, "has a fairer claim to botanical immortality among the martyrs of the science than that of Sibthorp."

In the month of March 1794 he again set out from London, on his second tour to Greece. He travelled to Constantinople in the train of Mr Liston, ambassador to the Porte, and was accompanied by Francis Borone, a Milanese servant, as a botanical assistant. They reached the Turkish capital in the month of May, where they were joined by Mr Hawkins, a friend of Dr Sibthorp's. Writing to Sir J. E. Smith from Pera, under date August 9, the Doctor says: "I arrived very ill with fever and colic; but, as soon as my health permitted, I visited the shores of the Bosphorus, the woods of Belgrade, and the sands of Domusderi,

on the Black Sea. I have noticed nearly 800 plants about Byzantium. . . . I often go upon the Bosphorus, while the dolphins play around me. Gulls here are so tame that they sit upon the roofs of houses like pigeons. The *Procellaria puffinus* is constantly flying up and down the canal; they call them here by the emphatic name of 'souls of the damned.' While I was reading in the palace garden the other day, a vulture, *Percnopterus*, perched in the tree hanging over my head, and I could not resist, not having the fear of the Egyptians before my eyes, shooting it. The summer has been very hot and dry; there are few insects at present, except scorpions, mosquitoes, bugs, and others, happy accompaniments of this happy climate. The chase of the entomologist was almost over about a month since. I had fine sport. I write in good health and spirits, for yesterday my friend arrived, and to-day my baggage, having run '*per varios casus, et tot discrimina rerum.*' Hawkins is in high preservation; his appearance differs only from having the *labia barbata*—huge moustaches, which he is nursing for a Syrian and Egyptian tour. We are going together into Thessaly, Attica, and the Peleponnesus, and shall winter at Zante."

In pursuance of this plan, they visited various parts of Asia Minor, and on the 15th October arrived at Athens, from whence Dr Sibthorp wrote

again to his friend, communicating the melancholy intelligence of the death of his unfortunate attendant, Borone. "He had quite recovered," says the letter, "from an attack of illness, and on the evening of his melancholy fate was unusually gay, singing to a tune that Arakiel, Mr Hawkins' servant, played upon the guitar. Shortly after midnight we were awakened by the cries of Francesco, who had fallen into the street out of the window of the chamber where he slept. On the servants going down to him, he languishingly groaned to Arakiel, who was the first that reached him, 'Ah, povero Francesco é morto!' and presently after expired. We have every reason to think he was walking in his sleep. . . . . The next day, at evening, he was buried at the Church of the Madonna, under the shade of a mulberry-tree. The obsequies were performed in a very decent manner by four Greek priests, who chanted over him the burial service. . . . . The archbishop, who a few days before had expressed the strongest obligations to the English nation, pitifully sent a papas to demand 50 piastres (about L.12) for his permission to bury him. Yielding to the remonstrances of the consul, he withdrew his preposterous claim, but has since intimated that he would be glad of a present. We mean to send him a Greek Testament, that a metropolitan, who has four suffragans,

may read a lesson of piety. I most sincerely regret the distressing end of this poor youth. He had escaped from the thieves of Italy and from the inhospitable climate of Sierra Leone. He had been with me blocked up eight days by pirates at Mont Athos. Poor fellow! he was then very anxious to hide my money, that we might have something, he said, to return home with."

This painful event so much affected the spirits of Dr Sibthorp, that he was for some days after incapable of any exertion, even his journal being suspended. The two friends afterwards wintered at Zante, where our botanist was fortunate enough to procure, from an apothecary resident there, an ample and rich herbarium of the plants of the island, with their modern Greek names. The season was sufficiently favourable, in the middle of February 1795, to allow the travellers to proceed to the Morea, of which they made the complete circuit in rather more than two months. Here "the violet and primrose welcomed them in the plains of Arcadia; and the *Narcissus tazzetta*, which Dr Sibthorp was disposed to think the true poetic Narcissus, decorated in profusion the banks of the Alpheus. The barbarian horde, under whose escort they were obliged to travel, showed sufficient taste to gather nosegays of these sweet flowers. The oaks of the Arcadian mountains presented them

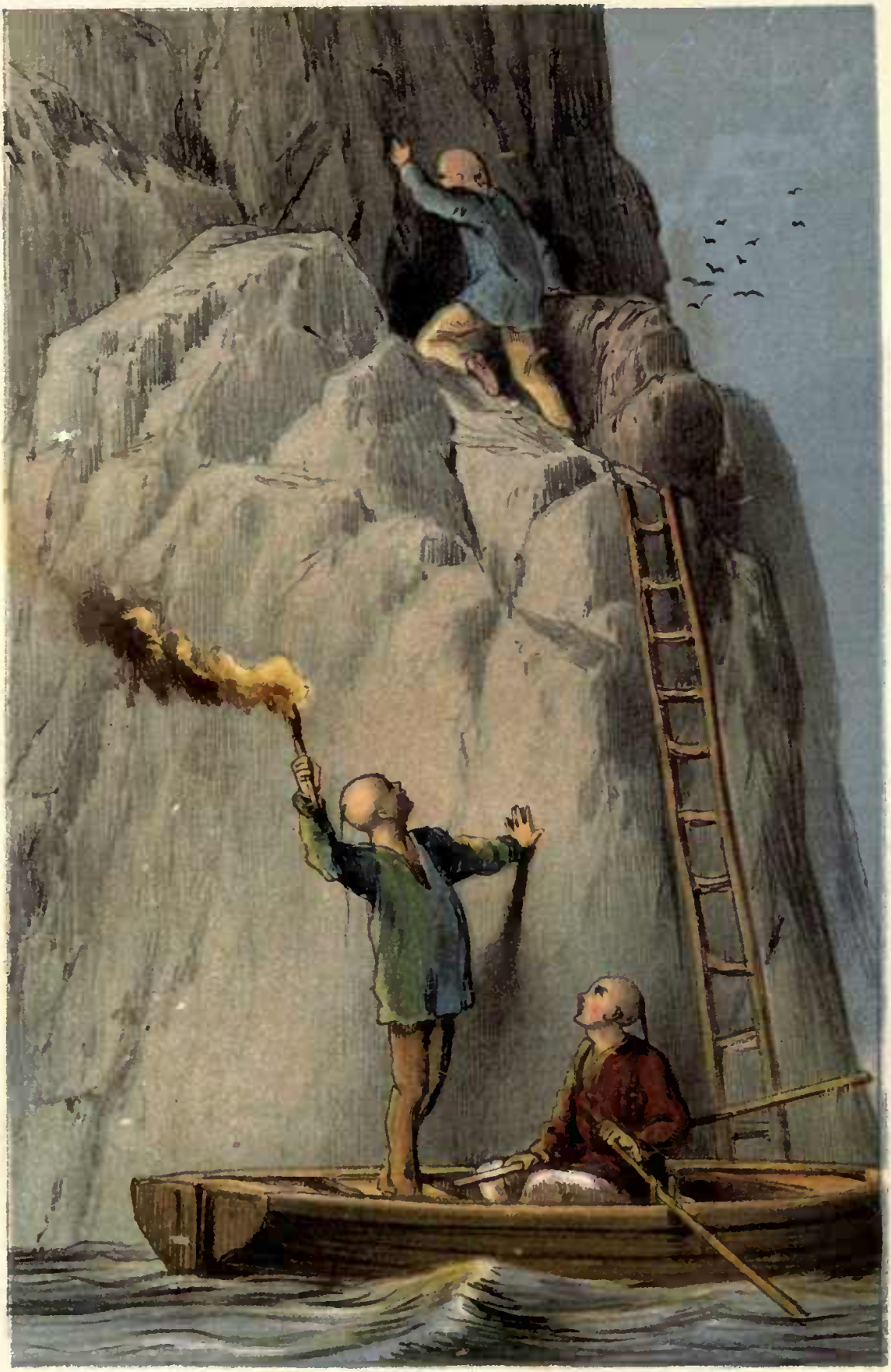
with the true mistletoe, *Loranthus europœus*, which still serves to make birdlime, whilst our misseltoe, *Viscus album*, in Greece grows only on the silver fir. Screaming among these ancient oaks was the jay, still called by its ancient name; and the water-ouzel, flying along the rocky sides of the Alpine rivulets of Arcadia, was regarded as probably the white blackbird, which Aristotle says is peculiar to the neighbourhood of Cyllene." But, amidst these varied floral and ornithological riches, our travellers looked in vain for the beauty of Arcadian shepherdesses, and listened equally in vain for the pipe of the sylvan swain. Owing to the oppression of the Government, many of these poor people were driven to lead a precarious and predatory life among the mountains.

At Hermione, now called Castri, in the Argolic peninsula, famous for the purple dye anciently prepared there, they found a vast pile of the shells from which that dye was obtained, and still denominated *porphyri*, the species being the *Murex trunculus* of Linnæus. From this place they returned by land to Argos, whence they proceeded to complete their tour, and, after various adventures, arrived again at Zante on the 29th April. There Dr Sibthorp parted from his faithful companion, whom he was destined never to see again. Mr Hawkins returned to Greece while his friend

proceeded to Otranto, which he reached after a long and uncomfortable passage of twenty-four days, during which he suffered so much exposure and illness as to originate that disorder under which, in a few short months, he sank to the grave. Being obliged by the weather to put in at the little island of Fanno, the N.E. wind, as he touchingly said, "nursed his cough and fever." He was confined to his bed in a miserable hovel; and after frequent attempts to sail, he was driven back six times by the unfavourable wind.

In the autumn of 1795 he reached England, and died at Bath on the 8th February 1796, in the thirty-eighth year of his age. This ardent botanist and estimable man deserves to rank among the most illustrious patrons of his favourite science, not only for his labours during life, but for the posthumous benefits he conferred upon it. By his will he gave an estate in Oxfordshire to the University of Oxford, for the purpose of publishing his *Flora Græca* in ten folio volumes, with 100 coloured plates in each, and an edition of the same work in octavo, without plates.

The task of editing the work was confided to the illustrious president of the Linnæan Society, who completed six of the volumes, and the last was published, after his death, by Mr R. Brown.



SEEKING NESTS OF THE ESCULENT SWALLOW

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Pages from the Abbé Domenech's Diary.

THE lively pages of the Abbé Domenech's Adventures in Texas and Mexico contain some anecdotes in which the vivacious young priest reminds one of the sallies of that renowned traveller and naturalist, Mr Waterton: for example, his picture of *A Crocodile Hunt*, which it is impossible to read without catching some of the spirit of adventure which it breathes.

Being reduced to very short fare, at one period of the mission, he says:—"That we might enjoy the luxury of a little fresh meat from time to time, we fattened cats, which I subsequently metamorphosed into most delicious fricassees. The chase, too, was made to contribute to the maintenance of our table. Whenever there were any pieces of small money in our round snuff-box, which was our iron-safe, and which in that capacity received

all presents of our parishioners, I laid out a portion of it in the purchase of powder and shot to be employed in shooting wood-quests and squirrels. One Thursday, when our treasure amounted to ten sous, and the children had a holiday, I provided myself with ammunition, and started in company with Charles, a young French gentleman and a keen sportsman, to shoot wild turkeys on the picturesque banks of the Medina. After beating the copses and brushwood to the utter destruction of our clothes and hands, we failed to start a single bird. Seeing this, my companion directed his attention to coveys of partridges which whizzed past us at every step, while I continued my way along the river's edge picking my steps with great caution, lest I should tread on rattlesnakes or *congos*,—hideous black serpents, extremely dangerous, which abound in the neighbourhood of watercourses. I arrived at length at a bend of the river where the water calmly reposed under the shadow of enormous fig trees. Athwart the foliage, the sun's rays gilded the parti-coloured water lilies which formed the framework of this sparkling mirror. The chase was soon forgotten, and whilst I stood admiring this lovely spot, the leaves of the water lilies were agitated, and I observed them disappear, and form, as it were, a pathway under the water. It at once occurred to me that some large fish was taking his

SHOOTING A CROCODILE

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promenade through this delicious aquatic garden, when suddenly I recognised the bony, dark brown back of a crocodile. Immediately I resolved on killing this creature, with a view to increase our stock of provisions. Being provided with small shot only, I charged the gun heavily with it, in the earnest hope that the animal would turn the side of his head towards me. I raised the gun to my shoulder and stood ready to fire. But, whether it were ill luck, or that the crocodile suspected danger, so it was that he only exposed the front of his head. At length, however, he made the desired move: I fired, and he disappeared under water. Have I missed him? No. Something comes up to the surface. I leaped for joy on perceiving that it was the crocodile's belly. In truth I was very proud. This animal is so hideous that I had no pity for him. I called aloud for my companion, who, fearing some accident had occurred, ran to me with all haste, and fully shared my delight at the sight of this enormous piece of game, which floated like a mass of wood on the surface of the water. Still our task was only half done; it remained to secure the prize. The river, on issuing from the basin, became very narrow and rapid: our enormous prey floated down with the current, very slowly, to be sure, but, should it once reach this narrow spot, it was entirely lost to us. The basin

was very deep and we durst not venture in, as neither of us could swim. Quite undecided as to how we should manage, and filled with disagreeable misgivings, we followed the motion of the crocodile with anxious minds. Fortunately a piece of tree which floated down before it arrived crosswise, stopped, and arrested the progress of the animal. Time was thus afforded to consider what was best to be done.

"We proceeded to cut a long thick *liane*, which was to be our harpoon, and having advanced into the water up to the waist, I cast it over the crocodile's back (which was now again uppermost), and by this means we drew him to the bank. All at once his tail commenced lashing our legs! Off we set at the top of our speed, uttering cries of horror the while. We fancied that those jaws of eighteen inches, and armed with sixty-seven long sharp teeth, were at our heels. At length we stopped. 'Sure as a gun,' said I, 'he is dangerously wounded; and these movements of his tail are either the last convulsions of life, or merely the agitation of the water, which we set in motion. This tail, too, was a matter of serious reflection to me. Report said it was excellent for culinary purposes; it would serve therefore to save, in a very satisfactory way, our stock of dried and smoked meat. Having recharged my rifle we returned,

but the crocodile had not moved. I fired point-blank into his eye and under the shoulder, not indeed without trembling a little. He was dead at last; there could be no doubt of it now. In length he measured ten feet, and in circumference round the middle four feet. We abandoned him for the moment, half sunk in water and mud, with his belly turned up to the sun, and off we started for Castroville to procure assistance and announce our exploit. Although crocodiles are not rare in the Medina, they are very seldom killed; the news created quite a sensation in town, and a waggon set out without delay, accompanied by as gay and uproarious a procession as one can well imagine. The distance was six miles; and, though killed in the morning, it did not reach our garden until the evening. . . . The cooking of it was a real fête. It is only the fleshy portions of the tail that are eaten. We distributed it liberally. The flesh did not strike me as well flavoured; it was but too evident that the animal had lain in the mud during the hottest part of the day. There also emanated from it a powerful odour of musk, which destroyed our appetites, and remained in our clothes for more than a week afterwards."

Here is the Abbé's portrait of *An Enthusiastic Naturalist*. . . . "He was an old German priest, who officiated in Braunfels and the neigh-

bouring colonies at that time. Although almost blind, he took it into his head to travel on foot from Braunfels to Fredericksburg for the purpose of collecting scientific curiosities along the way. He started one fine morning, his only baggage being a double pair of spectacles stuck on his nose, a tin box slung from his shoulders, and some provisions. The first day of his journey his box was filled with rare plants, and his pockets crammed with mineralogical specimens, while his hat was covered with insects, fastened to it with pins. As he had killed a great many serpents of large size, he knotted them together, and coiled them round his body. The next day, again, he killed a rattlesnake, seven or eight feet in length, which he also wound round his body, and which served him as a belt. On he went in this most grotesque attire, never for a moment thinking of the picturesque and startling effect he must produce on the minds of those who should meet him. Never relaxing in his search for some new object to add to his variegated accoutrements, and keeping his eyes continually on the ground, he was near marching into the midst of a body of Comanches, who were deer-hunting at the time. This walking collection of plants, insects, and reptiles, which advanced majestically towards them, so terrified them that they fled panic-stricken as from a supernatural appa-

rition. The third day our friend had consumed all his provisions, and finding only a little fruit in the woods, was beginning to feel the cravings of hunger, when he descried columns of smoke proceeding from a clearing. He at once turned his steps in that direction. Some redskins had pitched their camp on the spot, but, at the sight of this strange pedestrian, they began to yell, and prepared at once for flight. The worthy man employed the most significant signs for arresting their flight and tranquillising their fears, and succeeded in the end in making them understand he was dying of hunger. The Indians, not daring to offend the unknown divinity, tremblingly placed before him coffee, maize, and some mule's flesh, which he ate with great avidity, and like a starved mortal. His meal gave him strength enough to reach Fredericksburg, which he did on the third day without accident."

The Abbé himself seems, among his various accomplishments, to have dabbled in natural history; and he tells us that a collection of minerals and curious animals constituted his principal riches. In this repertory might be seen a centipede 11 inches long, and a caterpillar 13 inches in length and 2 in circumference. As for serpents, he had them of all sizes and of every variety! "Selection was easy, as they were everywhere underfoot, and

people walked upon them and crushed them without paying any attention to the fact. The business of destroying them was left to the pigs, the cats, and even the fowls. They fell resolutely on the head of the reptile and devoured it, without feeling any evil result."

At Quihi, a tiger-hunter killed a rattlesnake, which he had mistaken for a dead tree. It measured 17 feet in length, 18 inches in circumference, and was furnished with twenty-five rings or rattles. One day the Abbé's companion went to the barn for some maize and took up a serpent in his hand, mistaking it for a blade of corn; another day a cobra de capello glided into the school-room, and was on the point of biting one of the children, when it was killed by the priest with a blow of a stick. A horse they possessed was one evening missing, and they set out to search for him. Night was coming on apace, and, after a long hunt, the animal was still *non est inventus*. "All at once," the Abbé says, "I perceived at my feet, and gliding from under the grass where he had lain concealed, a rattlesnake of about two yards in length. I was about to take to my heels, when I bethought me that this serpent captured alive would be a great acquisition to my collection of reptiles, or, otherwise, his skin would make a grand pair of slippers for my mother. Quick as thought I rushed upon

him and knocked him senseless with a large clod of earth; I then tied a cord tightly round his neck, and the horse being meantime found, we retraced our steps to the town, my companion with the horse and I with the rattlesnake, which began by degrees to recover his strength in a most alarming manner, making the air resound with the noise of his rattles, and dragging my arms about by his strong and rapid writhings. I durst not let go my hold for fear of being bitten; the efforts, therefore, which I made to retain him, together with the alarm, threw me into a state of great agitation. However, I arrived safely at last, and tied the serpent to a bench, keeping down his head with my foot during the operation. Next day we were three at dinner; our bill of fare included no more than three eggs. What was to be done? I proposed that we should cook the serpent: my colleague approved the idea, remarking, 'that if the flesh be good we shall in future have wherewith to satisfy our appetites, nay, even to exceed the bounds of moderation, should we be so inclined!'

"Accordingly, I summoned to my aid all the culinary skill I possessed to dress the serpent, and in a very short time it appeared on the table stripped of its skin, minus the head and tail, cut into small pieces, gritted and well spiced with cayenne pepper. The new dish seemed palatable

enough, tasting somewhat of frogs and tortoise, but our natural repugnance to it was unconquerable; the idea of eating a serpent shocked our stomachs too much!"

On one occasion, during the service of the mass, the old sacristan, who had been a schoolmaster in his time, acted as clerk; he was a little old man, wearing enormous spectacles, which prevented him from seeing. All at once, as he was moving the book from one side of the altar to the other, he felt something creep up between his legs, and looking down saw a snake. It was a royal serpent, a harmless reptile of great beauty, which had its nest under the altar. As soon as the poor sacristan perceived it, he commenced screaming at the top of his voice, and dancing about from side to side, all the while pommelling the unlucky serpent with the missal; at length he succeeded in making it relax its hold, when it darted for safety into its nest beneath the altar.

In the course of his travels M. the Abbé occasionally gleaned curious facts relative to the natural phenomena he observed. For example:—On one of his excursions he came upon a *crevasse*—one of those openings which the Mississippi and its tributaries effect in their embankments, and through which their waters rush and devastate the plain. Thousands of negroes were at work up to the waist

in mud, striving to stop up the crevasse with fascines, branches of trees, and a kind of hemp, made of a parasite plant, called *barbe d'Espagnol*, which hangs pendant from the trees in long tendrils. This plant destroys the trees to which it clings, by absorbing all their sap. When dried, the natives use it for stuffing mattresses. A little further on, crossing the Mississippi again, our traveller came upon another very broad crevasse. "These crevasses (he says) form, in many instances, deep and dangerous marshes. Will it be believed that the one of which I am speaking was attributed to crabs? No doubt crabs are in myriads in this spot; still, comparing the cause with the effect, the mystery seems inexplicable. The explanation given me by a young creole, who was with me at the time, was this: the crabs make tubular holes in the earth, which, when prolonged, pierce the embankment. Through the hole thus formed a small quantity of water issues, which the pressure of the river increases at every instant. Should two of the holes be in juxtaposition, the water by degrees wears away the earth between them, and in a short time throws them both into one; and the volume of water being thus increased, enlarges its narrow channel, rushes into other crab-holes, until at length the bank is completely destroyed, and out rushes a river which inundates the

plain. During the day negroes are employed in destroying the nests of crabs, and hence these occurrences begin ordinarily during the night. But the crevasse in question was so broad and deep, that they were obliged to wait for the waters to diminish before they could repair it. We could not cross it on horseback, so we had recourse to a boat."

At another time, when at Matamoros, an American named Langstroth showed him, in a glass vessel, some small vesicles, about the size and shape of a raisin-grape, which he said were the productions of a honey ant; he was told that, in the state of Tomaulipos, in a valley little known, there were found ants of enormous size, which make honey sweeter even than that of the wild bee; they continue half buried in the earth, while others of the same family feed them during the time they make the honey. This honey is formed in a vesicle adhering to the ant; and when the vesicle is full, the insect dies. The honey the Abbé saw in the vesicles shown him was of the colour and transparence of a beautiful topaz of Brazil. The ant is said to resemble the ordinary ant. He inquired in vain for further details, but the existence of the insect was so little known that he could never succeed in learning more about it.

Before taking leave of this animated and enter-

taining writer, I will add two pleasant pictures he has drawn of the beauties of the night and the morning dawn in this tropical clime:—"I could not sleep. Over my head I saw glittering those myriads of stars that I so often gazed upon with admiration during my peregrinations. Among the constellations I looked out for the shepherd, which in my boyhood in France I loved so to gaze upon, when nature, shrouded in the mysterious veil of twilight, had only this solitary star twinkling overhead to light its track. The palm branches beneath which I lay gently vibrated in the air; the temperate breeze, breathing gently as it came, embalmed by the sweet odours of the woodland flowers, carolled in the distance, while it imparted to the sycamore leaves a voice of song strange and full of harmony, resembling the melancholy sighs of many Æolian harps. I breathed these evening perfumes with the utmost delight, and listened attentively to the languishing murmurs of leaf and breeze, cut short at intervals by the plaintive cry of the widow-bird, as she hopped from tree to tree. At length I fell asleep, wrapt in golden dreams."

Here is the day-dawn: "Its first faint colouring put to flight my slumbers. A penetrating odour filled the wood; the vanilla, the pachuli, the jessamine, the ebony-tree, and thousands of wild vines saturated the morning breeze with delicious per-

fumes. The blustering voice of the cardinal, the languishing coo of the turtle, the sad, sweet, moan of the blue bird, the song of the bird of paradise and the mocker, formed a charming medley of clear and plaintive notes. A light dew had strewn on the leaves of the trees and plants a thousand liquid pearls, which refracted the pure bright ray into its prismatic colours. These perfumes, this gentle air, these sweet songs, and these brilliant hues, did indeed make me happy. This fresh awakening of nature conveyed to my soul a feeling of undefined bliss, a vague happiness, which exceeded all the joys of earth, while it raised my thoughts towards heaven."

Captain Mayne Reid and the Quicksand.

MANY romantic stories have been told by travellers of the sagacity, attachment, and instinct displayed by their favourite steeds; but none, perhaps, has surpassed one related by Captain Mayne Reid.

That adventurous traveller was journeying in Mexico, on his way to Santa Fé: he had pushed forward with a small party ahead of the caravan by which they were accompanied, desirous to reach the capital a few days in advance of the waggons. The route they took lay, for a hundred miles or so, through a barren desert, without game and almost without water. The buffalo had all disappeared, and deer were equally scarce. They were obliged to content themselves with the dried meat which they had brought with them, now and then looking wistfully after a stray antelope which bounded away from them, keeping far out of range. On the third day after leaving the caravan, the Captain

thought he saw a pronged head disappearing behind a swell in the prairie. His companions were sceptical, and none of them would go with him in chase. He therefore, wheeling out of trail, started alone, leaving his dog in charge of a comrade, lest he should alarm the antelopes. The horse was fresh and willing, and his master knew that, whether successful or no, he would easily be able to overtake the party by camping-time.

He struck directly toward the spot where he had seen the object of his pursuit. He supposed it to be about half a mile or so from the trail; it proved more distant—a common illusion in the crystal atmosphere of those upland regions. A curiously formed ridge traversed the plain from east to west, a thicket of cactus covering part of its summit. Towards this thicket his course was bent, and, arrived at the slope, he dismounted, and leading his horse silently up among the cactus plants, tied him to one of their branches. He then cautiously crept toward the spot where he fancied he had seen the game. Nor was he mistaken; not one antelope, but a brace of those beautiful animals was quietly grazing beyond; but, alas! too far off for the carry of a rifle. They were fully 300 yards distant, upon a smooth, grassy slope. There was not even a sage bush near to form a cover. What was to be done?

After turning over in his mind several alternatives, the Captain was still undecided, when, all at once, his eye rested upon a clay-coloured line running across the prairie where the animals were feeding. It was a break in the plain, a buffalo road, or the channel of a water-course; in either case the very cover that was wanted, for the antelopes were not a hundred yards from it, and were approaching towards it as they fed.

Creeping back out of the thicket, the eager huntsman now ran along the side of the slope toward a point where he had noticed the ridge was depressed to the prairie level. Here, to his surprise, he found himself on the banks of a broad streamlet, whose water, clear and shallow, ran slowly over a bed of sand and gypsum. The banks were low, not more than three feet above the surface of the water, except where the ridge advanced over the stream. Here there was a high bluff, and hurrying round its base he entered the channel, and commenced wading upward. As he anticipated, he soon came to a bend, where the stream, after running parallel to the ridge, swept round and passed through it. At this place he stopped, and peeped cautiously over the bank. The antelopes had approached within less than rifle reach of the stream, but they were still far above the position he had gained, and again bending down he waded on.

It was no easy task; the bed of the creek was soft and yielding, and he was compelled to tread slowly and silently lest he should alarm the game, but he was cheered in his exertions by the prospect of fresh venison for supper. After a weary drag of several hundred yards, he came opposite to a small clump of wormwood-bushes growing out of the bank. "I may be high enough," he thought; "these will serve for cover."

Raising his body gradually, he looked through the leaves. He was in the right spot; and bringing his rifle to a level he fired at the buck. The animal sprang from the ground and fell back lifeless. The Captain was about to rush forward and secure the prize, when he observed the doe, instead of running off, as he had expected, go up to her fallen partner and press her tapering nose to his body. She was near enough for him plainly to see that her look was one of bewilderment and inquiry. All at once she seemed to comprehend the fatal truth, and, throwing back her head, commenced uttering the most piteous cries, at the same time running in circles around the body.

The sight was too much for the compassionate feelings of Captain Reid. "Had I dreamed," he says, "of witnessing this painful spectacle I should not have left the trail. But the mischief was now done. 'I have worse than killed her,' I thought

'it will be better to despatch her at once;' and, with a faltering hand, I again levelled the piece and fired. My nerves were steady enough to do the work. When the smoke floated aside I could see the little creature bleeding upon the grass, her head resting upon the body of her murdered mate."

Shouldering his rifle, he was about to move forward, when, to his amazement, he found himself caught by the feet; held firmly, as if his legs had been in a vice. He made an effort to extricate himself; another, more violent and equally unsuccessful, and, with a third, lost his balance and fell back upon the water. Half suffocated, he regained his upright position, but only to find that he was held as fast as ever. Again he struggled to free his limbs. He could neither move them backward nor forward, to the right nor the left, and he became sensible that he was gradually going down. The fearful truth flashed upon him—he was sinking in a quicksand! A feeling of horror came over the hapless prisoner, as, with a feeling of desperation, he renewed his efforts, leaning to one side, then to the other, almost wrenching his knees from their sockets. His feet, despite all, remained as fast as ever. He could not move an inch!

He has thus thrillingly narrated the issue. "The soft, clingy sand already overtopped my horse-skin boots, wedging them around my ancles

so that I was unable to draw them off, and I could feel that I was still sinking slowly but surely, as though some subterraneous monster was leisurely dragging me down. This very thought caused me a thrill of horror, and I called aloud for help. To whom? There was no one within miles of me—no living thing. Yes! the neigh of my horse answered me from the hill, mocking me in my despair.

"I bent forward as well as my constrained position would admit, and, with frenzied fingers, commenced tearing up the sand. I could barely reach the surface, and the little hollow I was able to make filled up almost as soon as it had been formed. A thought occurred to me. My rifle might support me, placed horizontally. I looked for it. It was not to be seen; it had sunk beneath the sand. Could I throw my body flat, and prevent myself from sinking deeper? No; the water was two feet in depth, and I should drown at once! This last hope left me as soon as formed. I could think of no plan to save myself; I could make no further effort. A strange stupor seized upon me. My very thoughts became paralyzed. For a moment I was mad.

"After an interval my senses returned. I made an effort to rouse my mind from its paralysis, in order that I might meet death, which I now believed to be inevitable, as a man should. I raised myself.

My eyes had sunk to the prairie level, and rested upon the still bleeding victims of my cruelty. My heart smote me at the sight. Raising my eyes to heaven, I gazed upward with earnestness known only to the hearts of men in positions of peril like mine. As I continued to look up, an object attracted my attention. Against the sky I distinguished the outline of a large bird. I knew it to be the obscene bird of the plains, the buzzard-vulture. Whence had it come? Who knows? Far beyond the reach of human eye, it had seen or scented the slaughtered antelopes, and on broad, silent wing was now descending to the feast of death. Presently another, and another, and many others, mottled the blue field of the heavens, curving and wheeling silently earthward. Then the foremost swooped down upon the bank, and, after gazing round for a moment, flapped off toward its prey. In a few seconds the prairie was black with filthy birds, who clambered over the dead antelopes, and beat their wings against each other, while they tore out the eyes of the quarry with their fœtid beaks. . . .

"I was soon relieved from the sight. My eyes had sunk below the level of the bank. I had looked my last on the fair green earth! I could now see only the clayey wall that contained the river and the water, that ran, unheeding, past me. Once more I fixed my gaze upon the sky, and, with

prayerful heart, endeavoured to resign myself to my fate. But, in spite of my endeavours to be calm, the memories of earthly pleasures, and friends and home, came over me, causing me at intervals to break into wild paroxysms, and make fresh though fruitless struggles. Again I was attracted by the neighing of my horse. At the sound, a thought entered my mind, filling me with fresh hope. 'Perhaps my horse'—I lost not a moment. I raised my voice to its highest pitch, and called the animal by name. I knew that he would come at my call. I had tied him but slightly; the cactus limb would snap off. Again I called, repeating words that were well known to him. I listened with a bounding heart. For a moment there was silence, then I heard the quick sounds of his hoof, as though the animal was rearing and struggling to free himself; then I could distinguish the stroke of his heels in a measured and regular gallop. Nearer came the sounds, nearer and clearer, till the gallant brute bounded out on the bank above me. There he halted, and, flinging back his tossed mane, uttered a shrill neigh. He was bewildered, and looked upon every side, snorting loudly. I knew that, having once seen me, he would not stop until he had pressed his nose against my cheek; for this was his usual custom. Holding out my hands, I again uttered the magic words. Now,

looking downward, he perceived me, and, stretching himself, sprang out into the channel. The next moment I held him by the bridle. There was no time to be lost; I was still going down, and my arm-pits were fast nearing the surface of the quick-sand. I caught the lariat, and, passing it under the saddle-girths, fastened it in a knot, tight and firm. I then looped the trailing end, making it secure around my body. I had left enough of the rope between the bit-ring and the girths to enable me to check and guide the animal, in case the drag upon my body should be too painful.

"All this while the dumb brute seemed to comprehend what I was about. He knew, too, the nature of the ground on which he stood; for, during the operation, he kept lifting his feet alternately, to prevent himself from sinking. My arrangements were at length completed, and, with a feeling of terrible anxiety, I gave my horse the signal to move forward. Instead of going off with a start, the intelligent creature stepped away slowly, as though he understood my situation. The lariat tightened; I felt my body moving, and the next moment experienced a wild delight, a feeling I cannot describe, as I found myself dragged out of the sand. I sprang to my feet with a shout of joy. I rushed up to my steed, and throwing my arms around his neck, embraced him with delight. He

answered my caress with a low whimper, which told me that I was understood. I looked for my rifle. Fortunately it had not sunk deep, and I soon found it. My boots were left behind, but I stayed not to look for them, being smitten with a dread of the place in which I had left them. I was not long in retreating from the banks; and mounting, I galloped back to the trail. It was sunset before I reached the camp, where I was met by the inquiries of my companions, to whom I related my adventure; and for that night I was the hero of our camp-fire."

Perilous Adventure of Bishop Stanley

IN AN ALPINE PASS.

"Meek dwellers 'mid yon terror-stricken cliffs,
With brows so pure, and incense-breathing lips,
Whence came ye? Did some white-winged messenger,
On mercy's missions, trust your timid germs
To the cold cradle of eternal snows;
Or, breathing on the callous icicles,
Bid them with teardrops nurse ye?
Man, who, panting, toils
O'er slippery steeps, or, trembling, treads the verge
Of yawning gulfs, o'er which the headlong plunge
Into eternity, looks shuddering up,
And marks ye, in your placid loveliness;
Fearless, yet frail, and clasping his chill hands,
Blesses your pencilled beauty."

IT might have been supposed these elegant stanzas of Mrs Sigourney's, on "Alpine Flowers" had been written to commemorate the striking adventure of "The Mauvais Pas," as recorded by Bishop Stanley, who published it nearly thirty years ago in *Blackwood's Magazine.* Probably not many of my readers have read his romantic narrative, which affords some admirable illustrations of the courageous spirit and

descriptive powers of the writer, and contains a beautiful incident, evincing his ardent love of flowers. What student of natural history among us that does not feel he owes a debt of gratitude to the author of that charming book, "A Familiar History of Birds"—one of the most attractive and entertaining works on ornithology we possess? I am persuaded that all who have delighted themselves over its pages will read with interest this narrative of his personal adventures.

It was in the year 1818 that the Bishop (then Mr Stanley) arrived in the village of Martigny, a few days after that memorable catastrophe when, by the bursting of its icy mounds, the extensive lake of Mauvoisin was in an instant let loose, pouring forth six hundred millions of cubic feet of water over the peaceful and fruitful valley of the Drance, with the irresistible velocity of sixteen miles an hour, and carrying before its overwhelming torrent every vestige of civilised life which stood within its impetuous reach. The whole village and its environs exhibited a dreary scene of death and desolation; and the traveller found it impossible to contemplate the effects consequent upon so awful a visitation without a corresponding excitement of strong curiosity to follow the devastation to its source, and learn from personal inspection the mode in which Nature had carried on and

completed her dreadful operations. Accordingly, having ascertained that, although the regular roads, bridgeways, and pathways were carried away, a circuitous course over the mountains was practicable to the very foot of the glaciers of Mont Pleureur, which impended over the mouth of the Lac de Getroz, he determined to make the attempt. During the first day's journey nothing of particular importance occurred. The early dawn of the second morning found our traveller, accompanied by two guides mounted on horseback, and prepared for an excursion, which, under the most favourable circumstances, must be long and fatiguing. For the first three or four hours the road lay sometimes along plains, sometimes along heights, presenting a succession of striking objects among the wildest imaginable exhibitions of mountain scenery. At length the party descended into a valley of considerable extent, affording a flat platform of what had once been meadow land, but was then a wide plain, on whose surface, in every direction, were scattered in wild confusion, rocks and stones, and uprooted trees of all dimensions, deposited by the torrent, which had returned to its original channel, through which it was roaring over a bed of broken granite, forming a sort of loose and coarse shingle. This valley, though unconfined towards the west, was apparently closed in towards the east, immediately

in their route, by a stupendous barrier of precipitous rock, as if a mountain, impending over the river on the right, had shot forth one of its mighty arms, for the purpose of arresting the waters in their progress. On drawing nearer, however, a fissure, extending from the summit to the base, through the very heart of the rock, was perceptible, through which the river rushed in a more confined channel. It was evident that, unless they could pass onwards through this fissure, there was no alternative but to return. As they approached, the guides evinced considerable anxiety, casting anxious looks at certain blocks of stone embedded in small pools detached from the main current of the stream.

"The waters are higher than they were yesterday," said one.

"And are rising at this moment," replied his comrade, who was carefully watching the smooth side of one of the detached blocks, half-filling the calm and unruffled surface of one these diminutive lakes. And again, with scrutinising eyes, they looked towards the fissure.

"Shall we be able to stem the torrent in yonder spot?" asked the traveller.

"We hope so," they hastily answered; "but not a moment must be lost." And suiting the action to the word, their horses were spurred on at full

trot, the eyes of the guides being intently fixed on something evidently in or near the river. One of the men now asked Mr Stanley if he saw a dark speck at the foot of the left-hand precipice; and being answered in the affirmative,

"Monsieur," said he, "the waters are rising rapidly by the increased melting of the snows; and if that dark stone is covered when we reach the fissure, our passage through the torrent will be hazardous, if not impracticable."

From that instant the fragment was eagerly watched; but instead of becoming more marked and visible as it was more nearly approached, it diminished in size, and, notwithstanding every effort to urge on the horses, it soon dwindled to a speck, and was almost immediately after entirely lost under the ripple of white foam which broke over its highest point.

"It is all over," exclaimed the guides; and they reined in their panting horses. Alighting from his animal, Mr Stanley proceeded, in despair, to attempt securing, in a sketch, a reminiscence of the magnificent scene before him.

While thus engaged, he observed the two men in earnest conversation, walking to and fro, now looking back on the road they had travelled, and then casting their eyes towards the right; the only words he could distinctly hear—for they were

more than once repeated—being, "Mais il faut avoir bonne tête; a-t-il bonne tête?"

At length one of them addressed him: "Monsieur, il y a un autre chemin, mais c'est dangereux; c'est un *mauvais pas!*" On being questioned as to the nature of this *mauvais pas*, the guide gave no distinct information. It was neither steep nor fatiguing; but it required *une bonne tête, car, si on glisse, on est perdu!*"

This winding up was neither encouraging nor satisfactory; but having so repeatedly heard the danger of these mountain passes exaggerated, the courageous traveller expressed his readiness to try this path, if they had made up their minds to guide him. To this they consented, and preparations were instantly made; "for," added they, "the day is waning, and you will find there is much to be done."

From this point of the adventure Mr Stanley's account shall be given in his own words. "During the ride I endeavoured to pick up farther particulars respecting the winding up of our enterprise; but all I could learn was, that in consequence of the suspension of all communication in the valleys below, by the destruction of the roads and bridges, a chamois-hunter had, since the catastrophe, passed over this path, but that it had never before been used as a regular communication, and certainly

never would again, as none, but from sheer necessity, would ever think of taking advantage of it. In the course of rather more than an hour's sharp ascent we attained a more level surface in the bosom of a thick forest of pine and underwood, fronted, as far as I could guess, from occasional glimpses through gaps and intervals, by a gray dull curtain of bare rock.

"'We are approaching the *mauvais pas*,' said one of the guides.

"'Is it as rough as this?' said I, floundering, as I was, through hollows of loose stones and bushes.

"'Oh no; it is as smooth as a floor,' was the reply.

"'In a few minutes we shall be on the *pas*,' said the other, as we began to descend on the eastern declivity of the ridge we had been mounting for the last hour. And then, for the first time, I saw below me the valleys of the Drance spread forth like a map, and that it required but half a dozen steps at most to have cleared every impediment to my descending amongst them, in an infinitely shorter time than I had expended in mounting to the elevated spot from whence I looked down upon them. And then, too, for the first time certain misgivings as to the propriety of going further, and a shrewd guess as to the real nature of the *Mauvais Pas*, flashed across me, in one of those sudden heart-searching thrills so perfectly defined

in the single word *crebling*—a provincial term, expressing that creeping, paralyzing, twittering, palpitation sort of sensation which a nervous person might be supposed to feel, if, in exploring a damp and dark dungeon, he placed his hand unadvisedly upon some cold and clammy substance which his imagination might paint as something too horrible to look at. But whatever were the force and power of these feelings, it was not now the time to let them get the mastership, . . . and, after all, though there were very unequivocal symptoms of something terrible in the immediate vicinage of the undefined gray screen of rock before me, I had as yet no certainty of its appalling realities. For a furlong or two no great change was perceptible; there was a plentiful supply of twigs and shrubs to hold by, and the path was not by any means alarming. In short, I began to shake off all uneasiness and smile at my imaginary fears, when, on turning an angle, I came to an abrupt termination of everything bordering on twig, bough, pathway, or greensward, and the *Mauvais Pas*, in all its fearfulness, glared upon me. For a foreground (if that could be called a foreground, separated as it was by a gulf of some fathoms wide) an unsightly facing of unbroken precipitous rock bearded me on the spot from whence I was to take my departure, jutting out

sufficiently to conceal whatever might be the state of affairs on the other side, round which it was necessary to pass by a narrow ledge like a mantelpiece, on which the first guide had now placed his foot. The distance, however, was inconsiderable—at most a few yards—after which I fondly conjectured we might rejoin a pathway similar to that we were now quitting, and that, in fact, this short but fearful *trajet* constituted the substance and the sum total of what so richly deserved the title of the *Mauvais Pas.* 'Be firm; hold fast, and keep your eye on the rock,' said the guide, as I, with my heart in my mouth, stepped out. 'Is my foot firmly fixed?' 'It is' was the answer; and with my eyes fixed upon the rock, as if it would have opened under my gaze, and my hands hooked like claws on the slight protuberances within reach, I stole silently and slowly towards the projection, almost without drawing a breath. Having turned this point, I still found myself proceeding, but to what degree, and whether for better or worse, I could not exactly ascertain, as I most pertinaciously continued to look upon the rock, mechanically moving foot after foot with a sort of dogged perseverance, leaving to the leading guide the pleasing task, which I most anxiously expected every moment, of assuring me that the deed was done, and congratulating me on having passed the *Mauvais*

Pas. But he was silent as the grave—not a word escaped his lips; and on, and on, and on did we tread, slowly, cautiously, and hesitatingly, for about ten minutes, when I became impatient to learn the extent of our progress, and inquired whether we had nearly reached the other end. 'Pas encore.' 'Are we half way?' 'A peu près,' were the replies. Gathering up my whole stock of presence of mind, I requested that we might pause a while; and then, as I deliberately turned my head, the whole of this extraordinary and frightful scenery revealed itself at a glance. Conceive an amphitheatre of rock, forming throughout a bare, barren, perpendicular precipice, of I knew not how many hundred feet in height, the two extremities diminishing in altitude as they approached the Drance, which formed the cord of this arc; that on our left constituting the barrier which had impeded our progress, and which we had just ascended. From the point where we had stepped upon the ledge, quitting the forest and underwood, this circular face of precipice commenced, continuing without intermission till it united itself with its corresponding headland on the right—the only communication between the two being along a ledge in the face of the precipice, varying in width from about a foot to a few inches; the surface of the said ledge, moreover, assuming the form of an inclined plane, owing to

an accumulation of small particles of rock which had, from time immemorial, shaled from the heights above, and lodged on this slightly projecting shelf. The distance, from the time taken to pass it, I guessed to be not far short of a quarter of a mile. At my foot, literally speaking (for it required but a semiquaver of the body, or the loosening of my hold, to throw the centre of gravitation over the abyss), were spread the valleys of the Drance, through which I could perceive the river meandering like a silver thread; but, from the height at which I looked down, its rapidity was invisible, and its hoarse brawling unheard. The silence was absolute and solemn; for, fortunately, not a zephyr fanned the air to interfere with my precarious equilibrium.

"There was no inducement for the lesser birds of the field to warble where we were; and the lammer geyers and the eagles, if any had their eyries amidst these crags, were revelling in the banquet of desolation below. As I looked upon this awfully magnificent scene, a rapid train of thoughts succeeded each other—I felt as if I were contemplating a world I had left, and which I was never again to revisit; for it was impossible not be keenly impressed with the idea that something fatal might occur within the space of the next few minutes, effectually preventing my return thither as a living

being. Then, again, I saw before me the forms and figures of many I had left—some a few hours, some a few weeks before. Was I to see them again or not? The question again and again repeated itself, and the oftener, perhaps, from a feeling of presumption I experienced, in even whispering to myself that I decidedly should. '*Si on glisse, on est perdu!*' How horribly forcible and true did these words now appear,—on what a slender thread was life held! A trifling deviation in the position of a foot, and it was over. I had but to make one single step in advance, and I was in another state of existence. Such were a few of the mental feelings which suggested themselves, but others of a physical nature occurred. I had eaten nothing since leaving the old convent in which I had spent the preceding night, and the keen air on the mountains had so sharpened my appetite, that by the time I had reached the summit we had just quitted I felt not only a good deal exhausted but extremely hungry. But hunger, thirst, and fatigue, followed me not on the ledge. A feast would have had no charm, and miles upon a level road would have been as nothing. Every sense seemed absorbed in getting to the end; and yet, in the midst of this unenviable position, a trifling incident occurred, which actually for the time gave rise to something of a pleasurable sensation. About midway I espied,

in a chink of the ledge, the beautiful and dazzling blossom of the little *Gentiana nivalis*, and, stopping the guides while I gathered it, I expressed great satisfaction in meeting with this lovely little flower on such a lonely spot. And I could scarcely help smiling at the simplicity of these honest people, who from that moment, whenever the difficulties increased, endeavoured to divert my attention by pointing out or looking for another specimen. We had proceeded good part of the way, when, to my dismay, the ledge, narrow as it was, became perceptibly narrower, and at the distance of a yard or two in advance I observed a point where it seemed to run to nothing, interrupted by a protuberant rock. I said nothing, waiting the result in silence. The guide before me, when he reached the point, threw one foot round the projection, till it was firmly placed, and, holding on the rock, then brought up the other. What was I to do? Like Arthur Philipson's guide Antonio, I could only say, 'I was no goat-hunter, and had no wings to transport me from cliff to cliff like a raven;' 'I cannot perform that feat,' said I to the guide; 'I shall miss the invisible footing on the other side, and—then!' They were prepared for the case. One of them happened to have a short staff; this was handed forward, and formed a slight rail, while the other, stooping down, seized my foot, and,

placing it in his hand, answered, 'Tread without apprehension; it will support you as firmly as the rock itself; be steady—go on.' I did so, and regained the ledge once more in safety. The possible repetition of such an exploit was not by any means to my taste, and I ventured to question the foremost guide as to the chance of its recurrence, and the difficulties yet in store. Without pretending to disguise them, he proceeded to dilate upon that portion of our peregrination still in reserve, when the other interrupted him impatiently, and in French, instead of *patois* (forgetting in his anxiety to enjoin silence, that I understood every word he uttered), exclaimed, 'Not a word more, I entreat you; speak not to him of danger; this is not the place to excite alarm; it is our business to cheer and animate;' and, in the true spirit of his advice, he immediately pointed to a bunch of little gentians, exclaiming, 'Eh, donc, qu'elles sont jolies! regardez ces charmants fleurs!' Long before I had half accomplished the distance, and had formed a correct opinion as to what remained in hand, the propriety of turning back had more than once suggested itself; but, on looking round, the narrowness of the shelf already passed presented so revolting an appearance, that what with the risk to be incurred in the very act of turning about and forming anything like a *pirouette* in my present position, added

to an almost insurmountable unwillingness to recede, for the reasons above mentioned, and the chance that, as it could not well be worse, the remainder might possibly be better, I decided on going on, estimating every additional inch as a valuable accession of space, with a secret proviso, however, in my own mind, that nothing on earth should induce me to return the same way, notwithstanding the declaration of the guides, that they knew of no other line, unless a bridge, which was impassable yesterday, had been made passable to-day, and we knew the people were at work, for a man had gone before us with an axe over his shoulder.

"Thus persevering with the speed of a tortoise or a sloth, these solemn slow movements of hand and foot forcibly reminding me of that cautious animal, we at last drew near to a more acute point in the curve of this gaunt amphitheatre, where it bent forward towards the river, and consequently we were more immediately fronted by the precipice forming the continuation of that on which we stood. By keeping my head obliquely turned inwards, I had hitherto in great measure avoided more visual communication than I wished with the bird's-eye prospect below; but there was no possibility of excluding the smooth bare frontage of rock right overhead. There it reared itself from the clods

beneath to the clouds above, without outward or visible sign of fret or fissure, as far as I could judge, on which even a chamois could rest its hoof; for the width of whatever ledge it might have was diminished, by the perspective view we had of it, to Euclid's true definition of a mathematical line—viz., length without breadth. At this distance of time I have no very clear recollection of the mode of our exit, and cannot speak positively as to whether we skirted any part of this perilous wall of the Titans, or crept up through the corner of the curve by some fissure leading to the summit. I have, however, a very clear and agreeable recollection of the moment when I came in contact with a tough bough, which I welcomed and grasped as I would have welcomed and grasped the hand of the dearest friend I had upon earth, and by the help of which I in a very few more seconds scrambled up, and set my foot once more, without fear of slips or sliding, on a rough heathery surface, forming the bed of a ravine, which soon led us to an upland plateau, on which I stood as in the garden of Paradise."

Visit of M. Huc to the Lamasery of Kounboum.

A Feast of Flowers! The very words breathe of romance, and remind us of the lovely vale of Cashmere,

"With its roses, the brightest that Earth ever gave;"

whose floral festivity is so charmingly painted in "The Light of the Haram." The reader will accordingly be prepared to expect a romantic chapter.

The Lamasery of Kounboum was visited by the renowned traveller M. Huc, who thus describes it:—"At eleven leagues from Tang-Krou-Gul there is, in the land of the Si-Fan, or eastern Thibetians, a Lamasery, the fame of which extends not merely through Tartary, but even to the remotest part of Thibet. Thither pilgrims flock from all quarters, venerating; for there was born the famous reformer of Buddhism. The Lamasery bears the name of Kounboum, and contains nearly four thousand lamas. Its site is one of enchanting beauty. Ima-

gine, in a mountain's side, a deep broad ravine, adorned with fine trees, and harmonious with the cawing of rooks and yellow-beaked crows, and the amusing chattering of magpies. On the two sides of the ravine, and on the slopes of the mountain, rise, in an amphitheatrical form, the white dwellings of the lamas, of various sizes, but all alike surrounded with a wall and surmounted by a terrace. Amidst these modest habitations you see rising, here and there, numerous Buddhist temples with gilt roofs, sparkling with a thousand brilliant colours, and surrounded with elegant colonnades. The houses of the superiors are distinguished by streamers floating from small hexagonal turrets; almost at every step you see niches, in form resembling a sugar-loaf, within which are burning incense, odoriferous wood, and cypress leaves. The most striking feature of all, however, is to see an exclusive population of lamas, walking about the numerous streets, clothed in their uniform of red dresses and yellow mitres."

This renowned establishment enjoys so high a repute, that the worshippers of Buddha resort thither in pilgrimage from all parts of Tartary and Thibet. Upon the great festivals the congregation of strangers is immense; and of these there are four in the year—the most famous of all being the "Feast of Flowers," which takes place on the 15th

day of the first month. M. Huc and his companions were installed at Kounboum ten days previous, and watched the numerous caravans of pilgrims arriving by every road that led to the Lamasery. The festival was in every one's mouth; the flowers, it was said, were that year of surpassing beauty; the Council of the Fine Arts, who had examined them, had declared them to be far superior to those of preceding years.

Eager to behold these marvellous flowers, the strangers hastened, as may be readily supposed, to seek information respecting a festival so entirely unknown. The following details were furnished them on this curious ceremony:—

"The flowers of the 15th of the first moon consist of representations, secular and religious, in which all the Asiatic nations are introduced, with their peculiar physiognomies and their distinguishing costumes. Persons, places, apparel, decorations—all are formed of *fresh butter!* Three months are occupied in the preparations for this singular spectacle. Twenty lamas, selected from among the most celebrated artists of the Lamasery, are daily engaged in these butter-works, keeping their hands all the while in water, lest the heat of the fingers should disfigure their productions. As these labours take place chiefly in the depth of the winter, the operators have much suffering to endure from

the cold. The first process is thoroughly to knead the butter, so as to render it firm. When the material is thus prepared, the various portions of the butter-work are confided to various artists, who, however, all alike work under the direction of a principal, who has furnished the plan of the flowers for the year, and has the general superintendence of their production. The figures, &c., being prepared and put together, are then confided to another set of artists, who colour them, under the direction of the same leader." What a curious and comical idea—a museum of works in butter!

M. Huc proceeds thus to describe what he saw when the period for the grand *spectacle* arrived:—

"On the eve of the festival, the arrival of strangers became perfectly amazing. In every direction you heard the cries of the camels and the bellowing of the long-haired oxen on which the pilgrims had journeyed thither. On the slopes of the mountain overlooking the Lamasery arose numerous tents, wherein were encamped such of the visitors as had not found accommodation in the dwellings of the lamas. Throughout the 14th, the number of persons who performed the pilgrimage around the Lamasery was immense. It was for us a strange and painful sight to view that great crowd of human beings prostrating them-

selves at every step, and reciting, in under tones, their form of prayer.

"On the 15th the pilgrims again made the circuit of the Lamasery, but by no means in such numbers as on the previous days. Curiosity impelled the great majority towards the points where preparations were making for the Feast of Flowers. When night fell, we went to see the marvellous butter-works, of which we had heard so much. The flowers were arranged in the open air, before the various temples of the Lamasery, and displayed by illuminations of the most dazzling brilliancy. Innumerable vases of brass and copper, in the form of chalices, were placed upon slight framework, itself representing various designs; and all these vases were filled with thick butter supporting a solid wick. The illuminations were arranged with a taste that would have reflected no discredit on a Parisian decorator.

"The appearance of the flowers themselves quite amazed us. We could never have conceived that in these deserts, amongst a half savage people, artists of such eminent merit could have been found. From the paintings and sculptures we had seen in various Lamaseries, we had not in the slightest degree been led to anticipate the exquisite finish which we had occasion to admire in the butter-works. The flowers were bas-reliefs, of

colossal proportions, representing various subjects taken from the history of Buddhism. All the personages were invested with a truth of expression that quite surprised us. The features were full of life and animation, the attitudes natural, and the drapery easy and graceful. You could distinguish at a glance the nature and quality of the materials represented. The furs were especially good. The various skins of the sheep, the tiger, the fox, the wolf, &c., were so admirably rendered, that you felt inclined to go and feel them with the hand, and ascertain whether, after all, they were not real. These large bas-reliefs were surrounded with frames, representing animals and flowers, all in butter, and all admirable, like the works they enclosed, for their delicacy of outline and the beauty of their colouring. On the road which led from one temple to another, were placed at intervals small bas-reliefs representing, in miniature, battles, hunting incidents, nomadic episodes, and views of the most celebrated Lamaseries of Thibet and Tartary. Finally, in front of the principal temple, there was a theatre, which, with its personages and its decorations, were all of butter! The *dramatis personæ* were a foot high, and represented a community of lamas on their way to solemnize prayer. At first the stage is empty; then a conch is sounded, and you see issuing from two doors, two files of minor

lamas, followed by the superiors in their state dresses. After remaining for a moment motionless on the stage, the procession disappears at the sides, and the representation is over. This spectacle excited general enthusiasm. At length, being weary of the pressure caused by the waves of the immense mass that rolled to and fro, like a sea beaten by the tempest, we retired, the night being far advanced. Next morning, when the sun rose, not a trace remained of the Feast of Flowers. All had disappeared; the bas-reliefs had been demolished, and the immense collection of butter had been thrown down a ravine to feed the crows with. These grand works, on which so much pains, so much time, we may also say so much genius, had been expended, had served merely as a spectacle for a single evening. Every year they make new flowers, and every year upon a new plan. With the flowers disappeared also the pilgrims. Already, at daybreak, you saw them slowly ascending the tortuous paths of the mountain, returning to their homes in the desert sorrowfully and silently, for the heart of man can endure so little of joy in this world, that the day succeeding a festival is generally full of bitterness and melancholy."

A few days after the "Feast of Flowers," M. Huc determined to repair to the little Lamasery of Tchogorton, which served as a sort of country

house and botanical garden for the Faculty of Medicine. It was situated within half an hour's walk of Kounboum. Thither every year the grand lamas and students of the medical section proceed towards the close of summer, remaining generally for about a fortnight, collecting medicinal plants on the surrounding hills.

For some days the strangers enjoyed the most profound solitude. They were alone with a lama left in charge of the Lamasery. But the desert became, after a time, alive; and towards the commencement of September the lamas of the Faculty of Medicine repaired to Tchogorton for the purpose of botanizing. The disposable houses received all they could contain, and the rest dwelt in tents, sheltered by the great trees of the Lamasery. Every morning, after having recited their prayers in common, drunk their buttered tea, and eaten their barley meal, all the students in medicine tucked up their garments and went forth on the mountains, under the guidance of one of their professors. Each was provided with a long iron-pointed stick and a small pickaxe; a leathern bag, filled with meal, was suspended from the girdle, and some carried at their backs great tea-kettles, for the Faculty spent the entire day on the mountain. Before sunset the troop would return, laden with perfect faggots of branches and piles of plants

and grasses. As they came, descending from the mountains, supported by their long staves and bearing these burdens, they appeared more like poaching woodcutters than like future doctors in medicine. M. Huc, after describing these botanical gatherings, says:—"We were often obliged to escort in person those of the number who had special charge of the aromatic plants; for our camels, which, attracted by the odour, always put themselves in pursuit of these personages, would otherwise inevitably, and without the smallest scruple, have devoured those precious simples destined for the relief of suffering humanity." The remainder of the day was occupied in cleaning and spreading out on mats these various products of the vegetable kingdom. This medical harvest continued eight whole days; five more were devoted to the selection and classification of the various articles, and on the fourteenth day a small portion was given to each student, the greater proportion remaining the property of the Faculty of Medicine. On the fifteenth day a festival was kept, when a grand banquet of tea, with milk, barleymeal, little cakes fried in butter, and boiled mutton, regaled the neophytes of the Lamasery. Thus terminated this very original and amusing *fête champètre*, or botanico-medical expedition, and the illustrious Faculty gaily returned to Kounboum.

How far a knowledge of natural history in the zoological department is cultivated among the lamas, we may infer from an amusing description given to M. Huc by Sandara, a lama who had passed ten years in one of the grand Lamaseries, of certain "curious animals" he encountered on one of his pilgrimages. "In the country through which we passed," said Sandara, "we saw some very singular animals; they were not so big as an ordinary cat, and were covered with a sort of hair as hard as iron needles. Whenever one of these creatures perceived us it immediately rolled itself up, so that you could no longer distinguish head, tail, or feet, and it became, as it were, a great ball, all bristling with long, hard thorns. At first these beasts frightened us; we could not comprehend at all what they were, for the books of prayer say not a word about them. However, by degrees, we got courage enough to examine them closely. As these balls were too prickly to be touched with the hand, we placed a stick horizontally across one of them, and then pressed down both ends until we made the ball open itself a little, and then there came out a little face like a man's, that looked at us fixedly. We cried out in great terror, and ran away as hard as we could. At last, however, we grew accustomed to the little animals, and they even served us for an amusement; for it was good

fun to turn them over and over down the hills with the iron ends of our staves.

"We also met with worms of a very surprising kind. One day, when it was very hot, we were journeying along a little stream that meandered through a valley in which the grass grew very high. Towards noon, after drinking tea, we lay down and slept on the edge of a stream. You know that, according to the rule of Tsong Kabi, the yellow-mitred lamas do not wear trousers. When we woke up, we found a number of worms sticking to our legs; they were of a gray colour, and as big as one's finger. We tried to get them off, but could not; and as we did not experience any pain from them, we waited to see what would be the end of the affair. By and by the beasts swelled; and when they had become quite round and large, they dropped off themselves. Oh! Thibet is a strange country. You see animals there that are found nowhere else." The reader will by this time have discovered that these "wonderful animals" were no other than *hedgehogs* and *leeches!*

Before bidding farewell to the Lamasery of Kounboum, we must not forget to mention its name is composed of two Thibetian words, signifying Ten Thousand Images, and having allusion to the tree which, according to the legend, sprang from the hair of Tsong-Kaba, the celebrated re-

former of Buddhism, and which is said to bear a Thibetian character on each of its leaves. This marvellous tree was visited by our traveller, who had too often heard of it during his journey not to be eager to see it. At the foot of the mountain on which the Lamasery stands, and not far from the principal temple, in a great square enclosure formed by brick walls, is the *Tree of the Ten Thousand Images.* Careful examination assured M. Huc that there was something remarkable about this prodigy. Upon each of the leaves were well-formed Thibetian characters, all of a green colour, some darker, some lighter than the leaf itself. The bark of the tree, and its branches, which resemble those of the plane-tree, were also covered with similar characters. A piece of the old bark being removed, the young bark showed the indistinct outline of characters in a germinating state; and what appeared singular, the new characters were frequently different from those they replaced.

"The Tree of the Ten Thousand Images," says M. Huc, "seemed to us of great age. Its trunk, which three men could scarcely embrace with outstretched arms, is not more than eight feet high; the branches, instead of shooting up, spread out in the shape of a plume of feathers, and are extremely bushy—few of them are dead. The leaves are evergreen, and the wood, which is of a reddish tint, has

an exquisite odour, something like that of cinnamon. The lamas informed us that in summer, towards the eighth moon, the tree produces large red flowers of an extremely beautiful character. They assured us that there nowhere else existed another such tree; that many attempts have been made in various Lamaseries of Tartary and Thibet to propagate it by seeds and cuttings, but that all these attempts have been fruitless."

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